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THERAPEUTICAL APPLICATIONS

OF

OXIDE OF HYDROGEN

(MEDICINAL),

AND GLYCOZONE

BY

CHARLES MARCHAND, Chemist,

GRADUATE OF THE "ECOLE CENTRALE DES ARTS ET MANUFACTURES DE PARIS" (FRANCE).

TREATMENT OF DISEASES CAUSED

BY

GERMS, BACTERIA, MICROBES.

FIFTH EDITION.

NEW YORK

1893.

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TO THE MEDICAL PROFESSION.

I respectfully call attention to the fact, that I am the sole manufacturer of Peroxide of Hydrogen (Medicinal).

The commercial article is good enough for bleaching purposes, but totally unfit, unsafe, and always worthless to use as a remedy.

The low price of this commercial article (which we sell in bulk at five cents per pound) explains why unscrupulous druggists are base enough to place the reputation of the physician, as well as the life of his patient, in jeopardy, by substituting worthless imitations, by which they pocket a profit varying from 500 to 1000 per cent.

In fact, the substitution of the commercial for the Medicinal Peroxide, is calculated to work serious injury and destroy the physician's confidence in this most potent remedy.

The unsolicited articles, written by contributors to the medical literature and published by medical journals, prove that Marchand's Peroxide of Hydrogen (Medicinal) is the only reliable preparation for its uniformity in strength, purity and stability, and also for its healing and bactericide properties, which are considerably increased to the detriment of its bleaching properties.

The virtues of Charles Marchand's Peroxide of Hydrogen (Medicinal) are due to the special process by which it is prepared, and it retains its germicide and curative power for any length of time when kept with ordinary care.

79153

In order to protect the Profession from fraud, Marchand's Peroxide of Hydrogen (Medicinal) is sold only in 1-lb., 8-oz. and 4-oz. bottles, bearing a blue label, white letters, red and gold border with his signature; never sold in bulk.

By specifying in your prescriptions Ch. Marchand's Peroxide of Hydrogen (Medicinal), original package, you will never be imposed upon.

Glycozone is sold only in 1-lb., 8-oz. and 4-oz. bottles, bearing a yellow label, white and black letters, red and blue border, with his signature; never sold in bulk.

Insist upon getting these wonderful remedies in their original packages and you will never be disappointed.

Yours very respectfully,

Chemist and Graduate of the "Ecole Centrale des Arts et Manufactures de Paris" (France.)

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RELATIONS

OF

BACTERIA TO DISEASE.

THE branch of science named Bacteriology was opened to the medical profession by the classical researches of Prof. Pasteur in the settlement of the question of spontaneous generation, and in his subsequent studies of the process of fermentation. With the investigations of that distinguished French *savant* began our first positive knowledge of the definite relations of bacteria to disease in the animal kingdom.

Prof. Robert Koch, of Berlin, has contributed widely by his experiments to the progress in knowledge of the etiology of infectious and contagious diseases.

Owing to the methods which he has devised in order to practically and easily isolate different species of bacteria, we are now enabled to follow the phases of their development in pure cultures, under varying circumstances.

Microscopical examinations show that, during the various stages of their life, bacteria present different forms and dimensions ; but it is also demonstrated that one species of bacteria, placed under the same circumstances, always present the same forms, and produce the same effects.

Bacteria are principally constituted by an albuminoid substance, called microproteine.

The pathogenic bacteria only are of the greatest interest to the physician, and, according to the definition given by Prof. Koch, a micro-organism is pathogenic when it presents the following characteristics :

First—It must be found in the excretions, secretions, or tissues of the animal suffering or dead from the disease.

Second—The micro-organism must be cultivated out from the organism.

Third—A pure culture inoculated in an animal should reproduce the disease.

Fourth—The bacteria should be found in the humors or tissues of the animal after death.

Pathogenic bacteria are differently affected in their infective power by the soil in which they grow ; some of them have a limited or local action, and others produce the infection of the whole system with a prodigious rapidity.

These facts have been demonstrated from microscopical examinations ; for example, the autopsy shows that the blood of a patient who died from Diphtheria is invaded with a large number of microbes called micrococci, the same microbes being detected also in the diphtheritic membrane, which was at first the seat of this infectious disease.

The microscopical examination of the blood of a patient who died from Anthrax shows the presence of the Bacillus Anthracis, which was at first found only in the excretions or pus coming from the infected surface.

Consequently, the contagion is not always immediate. During this period of localization of the disease, the microbian element should be destroyed by a proper medication, in order to prevent its propagation through the whole system.

Micro-organisms or germs in the atmosphere have been shown by Ehrenburg to exist in masses or clouds ; so that, in a room containing infection, a portion of the air may be loaded, while other portions are nearly free, which would seem to explain cases of escape from septic or zymotic influences.

It is owing to the presence of these micro-organisms that Profs. Pasteur, Koch, Tyndall, and others have been able to establish the germ theory of disease.

Diseases caused by Germs or Microbes.—It is to the micro-organisms we are indebted for Catarrh, Ozœna, Hay Fever, Diphtheria, Croup, Sore Throat, Quinsy, Tonsilitis, Bronchitis, Whooping-cough, Laryngitis, Pharyngitis, Pneumonia, Consumption, Catarrh of the Stomach, Women's Weaknesses, Whites, Leucorrhœa, Typhoid Fever, Scarlet Fever, Measles, Small-pox, Skin Diseases, Yellow Fever, Cholera, Abscesses, Carbuncle, Ulcers, Gonorrhœa, Syphilitic Sores, and other chronic affections.

It is no wonder, after becoming acquainted with such facts as the above, that scientists have studied with such care the properties of antiseptics in order to destroy the germs.

Destructive Action of Ozone upon the Virus.—A fact known by bacteriologists and chemists is that: All virus is albuminoid, whether propagative or not; it is destroyed, or by coagulation rendered inert, by the oxidizing action of "Ozone," just as it is by contact with corrosive sublimate and other antiseptics.

Then, it is evident that if some substance could be produced which would oxidize or destroy these micro-organisms, so as to change their infectious character, a great benefit would result, providing this destroyer of germs would have no injurious consequences upon the life of animals.

Such a substance we have in ozone, O_3; or condensed oxygen, $O_2 + O$. It is nature's disinfectant.

Houzeau found the air of the country at the height of six feet above the ground to contain $\frac{1}{150000}$ of its weight of ozone, or $\frac{1}{700000}$ of its volume.

This very small quantity of ozone is sufficient, owing to its wonderful oxidizing power, to destroy germs.

"Ozone" is a normal constituent of fresh air; its proportion varies with temperature and electric conditions of the atmosphere.

Billard, Wolf, Boeckel, and Strambes agreed that the cholera, when it raged in Strasbourg, Berlin, and Milan, coincided with the absence of ozone in the atmosphere, and that ozone reappeared at the end of the epidemy.

These observations are in perfect accord with those obtained by Dr. F. H. Hammond. Dr. Moffatt, Romain Vigouroux, Uhle, and numerous other scientists also attribute the prevalence at time of cholera, malarious fever, to the absence of ozone in the air.

Is it due to an excessive production of miasms relatively to the normal proportion of ozone, or is it because "Ozone" is in deficiency to destroy these germs?

No one could answer this question, but the positive fact is that: "If Ozone is in excess, there is no epidemy."

The wonderful antiseptic value of "Ozone" has attracted the attention of all scientists, and a number of chemists have devised different methods of its production; but no one of these processes could be used to manufacture ozone industrially.

We have in Peroxide of Hydrogen, H_2O_2, a substance which is always on a strain to break up into water and nascent oxygen, or ozone.

The fact that Peroxide of Hydrogen (medicinal) generates nascent oxygen (near to the condition of Ozone), when brought into contact with any infected surfaces is proved by experiments which I have made in order to establish the comparative chemical reactions between these two wonderful bactericides, and I now submit to the profession the results which I have obtained.

COMPARATIVE CHEMICAL REACTIONS BETWEEN MARCHAND'S PEROXIDE OF HYDROGEN (MEDICINAL), H_2O_2, AND OZONE (FORMULA O_3),

Iodide of Potassium Solution in presence of	H_2O_2 Solution.	Result of reaction:	Potash and Iodine.
	Ozone.	Result of reaction:	Potash and Iodine.
Permanganate of Potash Purple Solution in presence of	H_2O_2 Acidulated Solution.	Result of reaction:	Immediate discoloration. Escaping of Oxygen Gas and formation of brown Oxide of Manganese.
	Ozone.	$K_2Mn_2O_8 + 4H_2O_2 = 2KHO + Mn_2H_6O_6 + 4O_2$	
Peroxide of Iron Salt Solution and Ferricyanide of Potassium Solution mixed together in presence of	H_2O_2 Solution.	Result of reaction:	Ferricyanide is transformed into Ferrocyanide of Potassium, giving a blue coloration.
	Ozone.	Result of reaction.	Same result.
Tincture of Indigo in presence of	H_2O_2 Solution.	Result of reaction:	Decoloration.
	Ozone.	Result of reaction:	Decoloration.
Nitrous acid in presence of	H_2O_2 Solution.	Result of reaction:	Formation of Nitric Acid.
	Ozone	Result of reaction:	Same result.
Arsenious Acid in presence of	H_2O_2 Solution.	Result of reaction:	Formation of Arsenic Acid.
	Ozone.	Result of reaction:	Same result.
Tincture of Guaiacum mixed with either Blood or extract of Malt.	H_2O_2 Solution.	Result of reaction:	Blue coloration, with effervescence and coagulation of albumen.
	Ozone.	Result of reaction:	Same reaction.
Organic substances such as Cotton, Woolen, Silk, Feathers, Hair, Bones, Ivory, etc., in presence of	H_2O_2 Alkaline Solution.	Result of reaction.	Oxidizing and Bleaching Action.
	Ozone.		Same result but slower action.

IMPORTANT INFORMATION ON PEROXIDE OF HYDROGEN.

Pure anhydrous Peroxide of Hydrogen yields four hundred and seventy-five volumes of oxygen; that is, it gives off four hundred and seventy-five times its own volume of oxygen. It is a very unstable liquid compound, having by itself a slight acid reaction to the litmus paper. Its decomposition into water and oxygen takes place under the most enigmatical influences. Hence it is not an article of commerce. Charles Marchand's Peroxide of Hydrogen (medicinal) is really a $3\frac{1}{8}$ per cent. solution of the anhydrous peroxide in water; 1 per cent. solution yields 4.75 times its own volume of oxygen. Consequently, the Peroxide of Hydrogen (medicinal) which I manufacture yields "$3\frac{1}{8}$ times 4.75" its own volume of oxygen; viz., a trifle more than fifteen times its own volume of oxygen gas. It is called a 15-volume solution.

Owing to the unstableness of this compound, my medicinalpreparation is acidulated with traces of hydrochloric acid and traces of phosphoric acid. The acid is indispensable in order to preserve the solution from rapid decomposition, and it is unnecessary to neutralize these traces of acid, before use, even in the most delicate cases.

All injurious chemicals are eliminated from Charles Marchand's Peroxide of Hydrogen (medicinal). It is a colorless, almost tasteless, and odorless fluid. The special process by which it is prepared, considerably increases its healing and bacteride power, to the detriment of its bleaching properties. It is uniform in strength, purity and stability; being kept in a cool place, such as a cool cellar, it retains its germicide power for any length of time.

Action of Charles Marchand's Peroxide of Hydrogen (medicinal) upon Animal Cells and Vegetable Cells.—See report by Dr. Paul Gibier, page 56; also report by Dr. S. Potts Eagleton, page 68. Experiments made by Bacteriologists prove beyond doubt that:

1st. Charles Marchand's Peroxide of Hydrogen (medicinal) has no injurious effect upon animal cells.

2d. It has a very energetic destructive action upon vegetable cells–microbes.

3d. It has no toxic properties; five cubic centimetres injected

beneath the skin of a guinea pig does not produce any serious result, and it is also harmless when administered internally.

4th. It is a stimulant to granulating tissues.

5th. It has no corrosive action whatever upon the healthy mucous membranes when applied to the treatment of diseases caused by germs, such as Diphtheria, Scarlet Fever, Whooping Cough, etc.

6th. It is the pus destroyer "par excellence." See article headed "The Necessary Peroxide of Hydrogen," by Dr. Robert T. Morris, page 55.

Testing Process.—The testing process which is often followed by chemists is based upon the following reaction which is accompanied by discoloration of the Permanganate of Potash solution ($K_2 Mn_2 O_8$.)

(No. 1.) $5H_2O_2 + K_2Mn_2O_8 + 3H_2SO_4 = K_2SO_4 + 2MnSO_4 + 8H_2O + 10O$

Experiments made by Prof. Weltzien, Schoene, and Hamel, show that the chemical reaction which takes place is expressed by the following equation:

(No. 2.) $K_2 Mn_2 O_8 + 4 H_2 O_2 = 2 KHO + Mn_2 H_6 O_6 + 4 O_2$.

According to reaction No. 1, half of the Oxygen liberated comes from the decomposition of $K_2 Mn_2 O_8$, and the other half comes from H_2O_2. On the contrary, according to reaction No. 2, the total amount of Oxygen which is set free, comes from $H_2 O_2$ alone.

Prof. Hamel tests the Peroxide of Hydrogen (according to equation No. 2) with a standard solution of Permanganate, and he measures the volume of oxygen resulting from the decomposition of $H_2 O_2$. (See Ad. Wurtz Dict. of Chemistry, Supplement p. 674.) This Oxygen represents the totality of the Oxygen contained in $H_2 O_2$. Instead of decomposing $H_2 O_2$ with the Permanganate, the same result may be obtained by using Oxide of Silver (Ag_2O) as expressed by the following equation:

(No. 3.) $Ag_2 (O+H_2) O_2 = Ag_2 + H_2 O + O_2$.

I abandoned the testing process based upon the reaction No. 1 because it implies that the oxygen contained in $H_2 O_2$ is not "Condensed Oxygen," but "Oxygen" in its inactive state. This assertion is wrong, otherwise the reaction expressed by the following equation:

(No. 4.) $5H_2 (O+O) + K_2 Mn_2 O_8 + 3H_2 SO_4 = K_2 SO_4 + 2Mn SO_4 + 8H_2O + 10O$.

would take place in the same conditions as the reaction No. 1, and such is not the case.

The results of my experiments, published on page 4, prove that oxygen exists in peroxide of hydrogen in its allotropic state, near to the condition of "ozone" or "condensed oxygen."

Action of Charles Marchand's Peroxide of Hydrogen upon Infected Surfaces.—When Peroxide of Hydrogen (medicinal) is brought into contact with any diseased surface, either of the skin or of the mucous membranes, its decomposition takes place immediately, and at first "ozone," which is the result of this reaction, coagulates the albuminoid matters of the secretions, the pus is destroyed, and also the bacteria. As soon as "ozone" has accomplished its cleansing effects upon the infected surface, it is readily transformed into ordinary oxygen, owing to its instability.

It is of great importance to notice that water, charged with fifteen times its own volume of oxygen gas (formula O) under pressure, has no similar action whatever on the albuminoid substances, as there is no coagulation, and no cleansing effects upon the unhealthy secretions of the infected surfaces.

This remark was necessary in order to establish plainly the difference between the therapeutical value of Peroxide of Hydrogen and the Oxygen or the Compound Oxygen treatments.*

Although Ch. Marchand's Peroxide of Hydrogen (medicinal) is recognized by leading physicians (see the opinions of the medical profes-

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*Concerning the so-called "Compound Oxygen treatment," I shall refer the profession to a very elaborate report on:

"The Management of Pulmonary Diseases," by Karl von Ruck, B. S., M. D., Director of the Winyah Sanitarium for Diseases of the Throat and Lungs. Ashville, N. C., 1889. On pages 8 and 9 of this publication, the author writes as follows:

"*Inhalation of Oxygen.*—Undoubtedly some benefit has been derived from such inhalations in anæmia and digestive derangements, also in certain forms of dyspnœa I have seen patients made much more comfortable after each inhalation, especially when a small quantity of nitrous oxide was added. I have also seen an occasional but undoubted increase in the number of red blood-corpuscles under its administration, both in essential and symptomatic anæmia, especially when iron preparations, which alone had proved inefficacious, could be administered at the same time. Its range of usefulness in consumption is secondary altogether to many other means, and it is only occasionally that anything more than temporary relief can thereby be given, and, no matter how plausible the theory as to its influence upon nutrition, practical experience shows that its use is always experimental, and frequently without result, the same as is the case in its employment in other diseases. Its mixture with nitrous oxide, in the form of the so-called 'compound oxygen,' by the temporary stimulating or intoxicating effect of the laughing gas, has no advantage whatever, except in dyspnœa, but it makes the patients who become the victims of charlatans feel that 'something powerful' is present in such inhalations, and induces them to believe in it the more readily. This 'compound oxygen cure for consumption' still flourishes in many localities, the same as do the quack remedies for the same object upon the shelves and counters of our druggists, and I have no doubt the venders of such with their adver-

sion on page 48) as being the most powerful and reliable antiseptic known, I now beg to submit to the profession the results of comparative tests which I have made, in order to demonstrate experimentally the difference between the bactericide potency of the following chemicals, acting upon a diphtheritic membrane for the destruction of microbes present in half a gramme of the said membrane.

Mixture or solution containing $3\frac{1}{5}$ per cent. of the following chemicals :

QUANTITY OF THE MIXTURE OR SOLUTION REQUIRED TO ANNIHILATE MICROBES.

	Cubic Centimetres
Glycozone (**harmless**)	0.75
Biniodide of mercury	1.00
Biniodide of silver	1.33
Marchand's Peroxide of Hydrogen, medicinal (**harmless**)	2.00
Bichloride of mercury	3.00
Nitrate of silver	5.00
Hypochlorite of lime	9.00
Chlorine gas (aqueous solution)	10.00
Iodine	10.00
Bromine	24.00
Iodoform (when fresh)	28.00
Salicylic acid	40.00
Muriatic acid	100.00
Carbolic acid	128.00
Permanganate of potash	140.00
Chlorate of potash	158.00
Alum	180.00
Tannin	190.00
Common salt	196.00
Sulphide of calcium	201.00
Boracic acid	300.00
Sulphurous acid	325.00
Lactic acid	360.00
Chloride of iron	371.00

Thymol, eucalyptus, bicarbonate of soda, lime-water, turpentine, have no action at all upon the microbes of a diphtheritic membrane

tisements, are as injurious parasites upon the consumptives as are the tubercle bacilli themselves; and while we must acknowledge that our efforts in phthiso-therapy against the latter have thus far been unavailing, many lives could undoubtedly be saved if the former could be extinguished by the enactment of wise laws which would oblige them to derive their means of livelihood otherwise than by trifling with human life."

when they are developed ; but they may have, to a certain extent, a preventive action upon the development of the spores.

The permanganate of potash, hypochlorite of lime, bichloride of mercury, the aqueous solution of chlorine gas, carbolic acid, nitrate of silver, etc., destroy the microbes ; but, being poisonous, they have the most dangerous effect upon the patient's life.

It is worthy of note that the medicinal preparations made by Charles Marchand, viz., Glycozone and Peroxide of Hydrogen (medicinal), are absolutely harmless. All other chemicals have toxicant, corrosive, or poisonous properties, as is proved by chemical tests ; and their use is, in many instances, more dangerous than the disease itself.

By referring to the comparative tests published on page 8, it is easy to notice that Charles Marchand's Peroxide of Hydrogen (medicinal), as a bactericide, is 1½ times as strong as bichloride of mercury, 2½ times as strong as nitrate of silver, 5 times as strong as iodine, 14 times as strong as iodoform, 20 times as strong as salicylic acid, 64 times as strong as carbolic acid.*

---

* *The Dangers of Carbolic Acid.*—The following experiments which I have made prove beyond doubt the dangers of applying carbolic acid in the treatment of suppurative diseases.

Six dogs were submitted to the action of this corrosive antiseptic in the following manner :

Two to three square inches of hair on the leg of each animal upon which the experimentation took place was closely shaved.

Morning and evening an application, from 8 to 10 drops (three per cent. solution) of carbolic acid was made upon these prepared surfaces and continued for ten days.

One hour or so after each application the surface was dry, owing to the evaporation of water, and then, as an immediate consequence, it was covered by a small quantity of pure, concentrated carbolic acid, of which the corrosive properties are well known.

At the expiration of said time two of these dogs were sick, each one having an ulcer on the prepared surface of the leg, which was due to the repeated application and evaporation of the three per cent. solution of carbolic acid ; and three days later each one of the four other dogs had an ulcer of the same nature, which was produced from the same cause.

These four dogs were then submitted to treatment by my Peroxide of Hydrogen, which in four weeks thoroughly cured them.

The application of the three per cent. solution of carbolic acid on the ulcers of the two other dogs was again continued, and on the fiftieth and sixty-second day, respectively, both animals expired from blood-poisoning. The autopsy showed that the blood of these animals was invaded by the bacteria of Davaine, which were detected by a microscopical examination.

GENERAL DIRECTIONS FOR APPLYING

CH. MARCHAND'S PEROXIDE OF HYDROGEN

(MEDICINAL), H_2O_2,

IN THE TREATMENT OF DISEASES CAUSED BY GERMS.

NOSE.—THROAT AND CHEST DISEASES.—TREATMENT.

CATARRH OF THE NOSE AND CATARRH OF THE THROAT.

Causes.—Micro-organisms, principally of the micrococcus species, have been detected by microscopical examinations, by scientific men, and by myself, in the mucous discharges from the nostrils of persons afflicted with this disease. Those germs which are the cause of the infection are readily destroyed by Charles Marchand's Peroxide of Hydrogen (medicinal), and there is no danger for the patient to use this remedy in any quantity, as it is positively harmless.

Treatment.—By means of an atomizer, made of glass and hard rubber, spray the nose and the throat copiously and repeatedly twice or three times every day with a mixture of

1 tablespoonful Marchand's Peroxide of Hydrogen (medicinal),
with 4 to 10 tablespoonfuls of water (cold or lukewarm),

according to the degree of inflammation in the mucous membranes of the nasal cavities; and, in case of extreme sensitiveness, use even a still larger proportion of water.

NOTE.—In the absence of an atomizer, apply the remedy to the nose by sniffing the liquid from the hand through the nostrils repeatedly, and gargle the throat. It is always beneficial to swallow some of the remedy.

Do not blow the nose too hard, as it might cause a temporary bleeding.

In chronic cases of long standing, especially at the beginning of the treatment, when the tenderness of the mucous membrane is excessive,

it often happens that the patient will feel, during one hour or so after each application of the remedy, a partial obstruction of either one or the other of the nostrils.

This very unpleasant feeling is often accompanied by frequent sneezing, which is due to the tickling sensation produced in the nasal cavities by the presence of a great quantity of minute bubbles of "Ozone," being set free from the decomposition of Charles Marchand's Peroxide of Hydrogen coming in contact with the infected surface. The unhealthy secretions are destroyed by "Ozone," and the cleansing of the nostrils is made perfect.

In chronic cases, when the middle ear is affected, deafness is very often the consequence of this disease. Then ozonized vapor inhalations should follow immediately the spraying of the nose and the throat, and should be administered by means of Charles Marchand's Hand Atomizer and Ozonizer, with a mixture thoroughly made of

half Marchand's Peroxide of Hydrogen (medicinal)
and half chemically pure glycerine.

Renew this mixture every three days. It is important that the above mixture should be made perfect by shaking the bottle well, otherwise the spray-tube of the apparatus might be clogged on account of the syrupy nature of the glycerine.*

The profession well know that the therapeutical agents used for the treatment of this disease have been as follows:

Bichloride of Mercury.—Calomel.—Sulphate of Zinc.—Sulphate of Copper.—Alum.—Nitrate of Silver.—Carbolic Acid.—Salicylic Acid.—Permanganate of Potash.—Borax.—Boracic Acid.—Subnitrate of Bismuth.—Common Salt.—Muriate of Ammonia.—Extract of Eucalyptus.—Thymol.—Cocaine.—Camphor, etc.

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* When chronic Catarrh of the Nose is very tenacious and painful, it is necessary at night, before retiring, to apply a few drops of Glycozone to the nostrils. Sniff it hard, as it will accelerate the cure.

In many cases the incurability of Chronic Catarrh of the Nose is due to partial or complete obstruction of the nasal cavities, caused by some abnormal conditions of growth, differing in their nature.

When such is the case, apply Marchand's Peroxide of Hydrogen, as heretofore explained, morning and evening, and after ten or fifteen days, if the excrescence does not disappear, it will be necessary to have a surgical operation performed for its removal.

A permanent cure may then be effected in a very short time.

After the excrescence has been removed or destroyed by means of the thermo-cautery, or any other operation (*no caustic should be used, as it will most likely destroy both taste and smell*), an absolute cure is certain if the Marchand Peroxide of Hydrogen treatment is earnestly followed.

It is easy to understand why Marchand's Peroxide of Hydrogen (medicinal) will surely accomplish a permanent cure, while the above-mentioned bactericides can give only temporary relief, and they are apt to injure or destroy both taste and smell.

First—Because Marchand's Peroxide of Hydrogen is the most powerful of all antiseptics yet discovered. (See page 8, "Comparative Tests.")

Second—Marchand's Peroxide of Hydrogen (medicinal) is absolutely harmless when applied externally or administered internally.

Third—The borax, boracic acid, subnitrate of bismuth, muriate of ammonia, common salt, camphor, eucalyptus, thymol, are not very dangerous remedies, but their bactericide properties are too limited to destroy the germs which are the cause of the disease.

On the contrary, Marchand's Peroxide of Hydrogen annihilates these germs instantaneously, and it leaves the healthy surrounding tissues in their normal condition. (See "Note," page 16.)

OZŒNA, OR PUTRID CATARRH OF THE NOSE.

In case of Ozœna, Marchand's Peroxide of Hydrogen (medicinal) should be applied three times daily, diluted in the following proportion:

Mix 1 tablespoonful Marchand's Peroxide of Hydrogen
with 4 to 7 tablespoonfuls of water (cold or lukewarm).

It is only in case of extreme tenderness of the mucous membrane that a weaker solution should be used, as follows: Mix 1 tablespoonful of Marchand's Peroxide of Hydrogen with 7 to 10 tablespoonfuls of water.

Spray the nostrils and the throat successively and copiously with this diluted Marchand's Peroxide of Hydrogen, or, in the absence of an atomizer, apply the remedy to the nose by sniffing the liquid from the hand through the nostrils repeatedly, and gargle the throat.

This treatment is so powerful that the destruction of the microbian element takes place immediately, and the putridity which characterizes this peculiar and repulsive affection is arrested three or four days after the beginning of its application.

The cure is ordinarily accomplished in four weeks, but in some instances, when the case is of a very long standing—having become chronic—it requires a longer time to effect an absolute cure.

In case of sneezing and obstruction of the nostrils after each application of the remedy, see the explanations given, page 10, article headed "Catarrh of the Nose." *

Marchand's Peroxide of Hydrogen (medicinal) is the most powerful remedy which can be used in order to subdue this most offensive and very repulsive disease, and it has no injurious or poisonous consequences. (See "Note," page 16.)

HAY FEVER.—ROSE COLD.—CORYZA.

Causes.—The microscopical examination of the unhealthy mucous secretions and excretions from the nostrils of Hay-fever sufferers demonstrated the presence of small ovoid micro-organisms, which are annihilated instantly when brought into contact with Marchand's Peroxide of Hydrogen (medicinal).

It is worthy of notice that the degree of susceptibility to the infectious action of these germs or microbes differs with different people. The spores and germs which cause this disease do not always find a proper medium for development in the mucous secretions of different people.

The peculiarity of this disease is that any one who is afflicted with Hay Fever can foretell every year, almost to a certainty, the day upon which the disease will begin, and also the day upon which they will get rid of it.

The logical explanation of this is that the conditions of life of afflicted people are always the same; that is, "the circumstances and surroundings of their existence are absolutely alike from year to year." Thus the microbian causes of the trouble develop under the same influences every year, at about the same time; and, consequently, the disease begins when the atmospheric conditions become favorable for the development of the spores I have mentioned. These spores grow, under proper conditions of temperature and dampness, in the mucous secretions of the nostrils, the microbian affection takes place, and inflammation and ulceration of the mucous membrane is the consequence.

These micro-organisms continue their growth as long as these favorable atmospheric conditions exist, and they disappear as soon as the temperature falls and while it remains at a lower degree. Then the effects disappear with their causes, and the patient gets rid of his trouble.

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* Glycozone should be applied to the nostrils morning and evening, in order to accelerate the cure.

Treatment.—The causes of Hay Fever being now well established, it is easy to understand that any remedy having the property to destroy microbes or germs will surely prevent or cure the disease by removing the cause, providing this antiseptic remedy will have no injurious effects upon the surrounding healthy tissues.

In case of Hay Fever, the remedy should be applied locally to the nostrils as a spray, and also by inhalations, in order to subdue the asthmatic attacks which accompany this very troublesome complaint.

It has been demonstrated that among the list of antiseptic remedies published on page 8, Marchand's Peroxide of Hydrogen (medicinal) is the most powerful bactericide, and it is absolutely harmless.

I have explained on page 7 that: When Marchand's Peroxide of Hydrogen (medicinal) comes in contact with any open and infected surface, either of the skin or the mucous membrane, ozone is set free, the microbes are instantly destroyed, as well as the unhealthy secretions which are caused by their action, and then the diseased surface is thoroughly disinfected and made perfectly clean and healthy. The residue of this reaction is water and a small quantity of coagulated albumen.

In fact, this Marchand's Peroxide of Hydrogen treatment is based upon the indisputable results which are obtained when a Hay-fever patient is going to the White Mountains, where the atmospheric conditions are such that the air contains always a small quantity of ozone. The constant breathing of this ozonized air accomplishes the cure of this disease in a very short time.

Hay Fever will always be prevented by an early application of Marchand's Peroxide of Hydrogen (medicinal), in those cases which occur regularly at known periods of the summer. When the disease has developed, the same treatment will check it within three or four days, and the cure is effected in less than two weeks; but it is advisable to continue the treatment during the whole Hay-fever season.

The remedy should be applied as follows:

First—Spray the nostrils and the throat copiously and repeatedly twice or three times every day with a mixture of

1 tablespoonful of Marchand's Peroxide of Hydrogen (medicinal) with 3 to 8 tablespoonfuls of water (cold or lukewarm).

according to the degree of inflammation.

Second—By means of Charles Marchand's Hand Atomizer and Ozonizer, an inhalation of ozonized vapor should be administered with a mixture thoroughly made of

half Marchand's Peroxide of Hydrogen (medicinal),
half chemically pure glycerine.

The above should be carefully mixed and renewed every three days. (See description and cuts of Charles Marchand's Hand Atomizer and Ozonizer, pages 18–19.)

The duration of each inhalation should not exceed ten minutes, and should be taken three to six times daily. Inspirations should be as deep and prolonged as possible.*

INFLUENZA.—LA GRIPPE.

Causes.—This disease is caused by microbes of a special kind which act upon both the respiratory organs and the nervous system.

The local symptoms of this infectious disease are a severe naso-pharyngeal catarrh with headache, sore throat and bronchitis.

The general symptoms are a feeling of lassitude, with acute pains in the limbs and back, accompanied with fever and profuse perspiration.

The internal treatment which may be prescribed by the physician with an appropriate diet will soon relieve the patient from the general symptoms, but, the danger is due to complications which frequently accompany the Influenza, such as laryngitis, bronchitis, acute lobar pneumonia and pleurisy.

In fact, the local symptoms, viz.: The inflammatory condition of the respiratory tract must be promptly subdued in order to prevent the microbian infection from producing dangerous complications.

Treatment of the Local Symptoms.—Owing to its destructive action upon the germs which are the cause of Influenza, Marchand's Peroxide of Hydrogen (medicinal) will promptly subdue the inflam-

*In very severe cases an application of Glycozone to each nostril, morning and evening, will accelerate the cure. (See page 10, article headed "Catarrh of the Nose.")

The ozonized vapor inhalations constitute a very important part of the treatment for this disease, as it relieves immediately Asthma, which always accompanies Hay Fever.

matory condition of the respiratory organs, and it should be applied as follows:

First.—Spray the nostrils and the throat copiously and repeatedly every three hours with a mixture made of

1 tablespoonful of Marchand's Peroxide of Hydrogen (medicinal)
with 4 to 10 teaspoonfuls of lukewarm water

according to the sensitiveness of the mucous membrane.

Second.—In order to reach the seat of the disease, deeply located in the bronchial tubes, by means of Ch. Marchand's Hand Atomizer and Ozonizer, (p. p. 18–19) inhalations of ozonized vapor must be administered three to six times every day with a mixture thoroughly made of

half Marchand's Peroxide of Hydrogen (medicinal)
half chemically pure glycerine.

Shake well and renew this mixture every three days.

This treatment will not only check the local symptoms, but it will also prevent the patient from being subsequently troubled with chronic bronchitis.

Note.—How to Use Marchand's Peroxide of Hydrogen (medicinal) in Acute Catarrh of the Nose.—In case of excessive tenderness of the mucous membrane of the nostrils, the spraying of the nose with a cold mixture of Marchand's Peroxide of Hydrogen (medicinal) with water, may cause a severe pain for a few moments.

In order to prevent this momentary pain from becoming too great, it is advisable to mix the remedy with lukewarm water instead of cold water. When such is the case, the required quantity of the mixture should be made fresh at each spraying.

Dr. Robert T. Morris advises an application of a three per cent. solution of cocaine before spraying the nostrils with diluted Peroxide of Hydrogen (medicinal) in order to quiet the smarting sensation. (See page 55.)

DIRECTIONS FOR USING CH. MARCHAND'S HAND ATOMIZER AND OZONIZER IN THE DIFFERENT CASES.

The three ounce glass bottle *L* is graduated in twelve parts, each part corresponding to one-quarter of one ounce, so that it is very easy to mix the medicines in the required proportions.

The working of this apparatus will be easily understood by referring to the illustrations of the apparatus given p. p. 18–19.

First.—The proper mixture of Marchand's Peroxide of Hydrogen (medicinal) with chemically pure glycerine for administering ozonized vapor inhalations is thoroughly made in the bottle *L*, as is shown on cuts No. 2 and No. 3.

Then, by quickly and repeatedly pressing the terminal soft rubber bulb *I*, the air is forced through the bottle *L*, and produces a coarse spray in the vaporizing bulb *A*. The concussion of the spray against the glass breaks up the mixture, and a large amount of fine ozonized vapor escapes in a continuous flow through the bent glass tube *E*, as represented on cut No. 2, or through the straight glass tube *F*, as shown on cut No. 3.

When the condensed liquid in the bulb *A* reaches the lower part of the neck *B*, it should be emptied in the bottle *L*, by disconnecting the spray-tube *D*. Then reconnect the parts, and the apparatus is again ready for use.

Second.—When the apparatus is needed to spray either the throat or the nose, Marchand's Peroxide of Hydrogen, (medicinal) is mixed with the necessary quantity of water in the graduated bottle *L*, as shown on cuts No. 4 and No. 5.

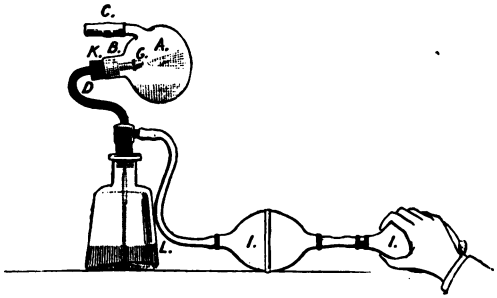
NOTE.—Some practitioners believe that Peroxide of Hydrogen may be inhaled by means of any of the ordinary inhalers, the same being placed in a jacket vessel of water heated to 120°–140° Fahr. This method is absolutely wrong, for the following reason: When Peroxide of Hydrogen is heated to 120°–140° Fahr., steam, oxygen (formula O), and only traces of ozone are inhaled by the patient (see foot note, page 7, article headed "Oxygen Inhalation.") On the contrary, when Peroxide of Hydrogen (medicinal) vapor is mechanically produced by means of the Hand Atomizer and Ozonizer the vapor which reaches the diseased tissues has the same curative properties as Peroxide of Hydrogen itself.

CHARLES MARCHAND'S

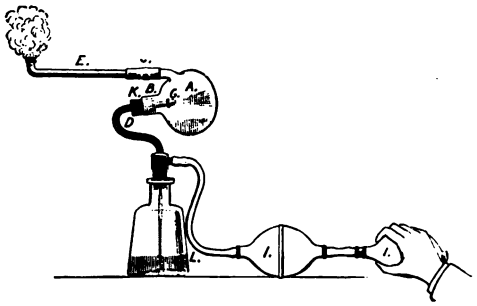
COMBINED

HAND ATOMIZER AND OZONIZER.

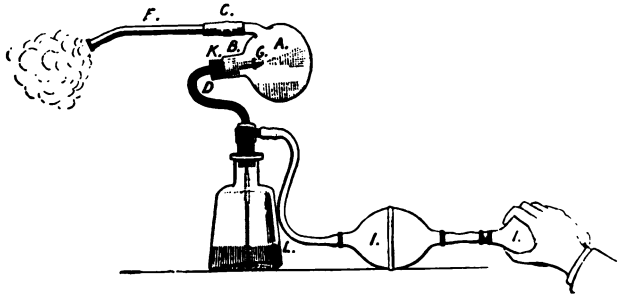
DESCRIPTION:



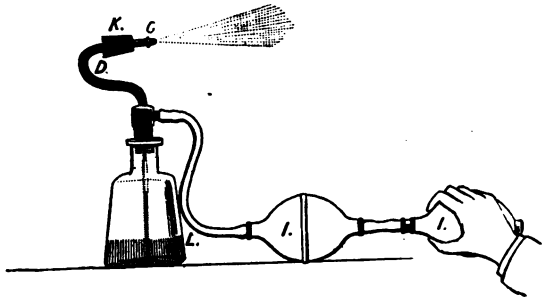
CUT NO. 1.—This cut represents apparatus when unpacked from its original box.



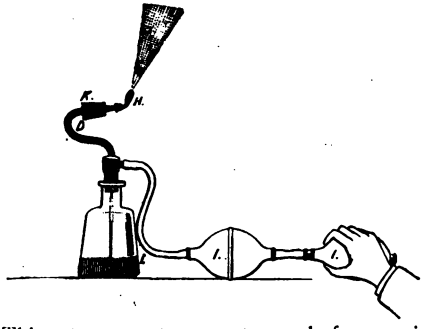
CUT NO. 2.—This cut represents apparatus ready for inhaling vapor through the nose in the treatment of Asthma, Bronchitis, and lung diseases.



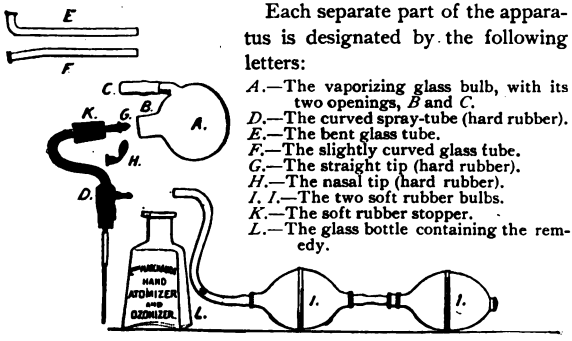
CUT NO. 3.—This cut represents apparatus ready for inhaling vapor through the mouth in the treatment of Asthma. Bronchitis and lung diseases.



CUT NO. 4.—This cut represents apparatus ready for spraying the throat.



CUT NO. 5.—This cut represents apparatus ready for spraying the nostrils.



Each separate part of the apparatus is designated by the following letters:

A.—The vaporizing glass bulb, with its two openings, *B* and *C*.
D.—The curved spray-tube (hard rubber).
E.—The bent glass tube.
F.—The slightly curved glass tube.
G.—The straight tip (hard rubber).
H.—The nasal tip (hard rubber).
I. I.—The two soft rubber bulbs.
K.—The soft rubber stopper.
L.—The glass bottle containing the remedy.

CUT NO. 6.—This cut shows the different parts of the Hand Atomizer and Ozonizer when disconnected.

CAUTION.

The spray-tube should be kept clean by passing tepid water through it at least twice a week. Should it get clogged, disconnect the vaporizing bulb *A* and the bottle *L*, unscrew the tip *G*, and blow both ways through the spray-tube, or pass a thin wire through it, as you would do for any ordinary spray atomizer.

The above-described apparatus is entirely made of glass and hard rubber, because no metal should come in contact with Marchand's Peroxide of Hydrogen (medicinal). Use only silver, hard rubber, glass, or porcelain spoons to measure either Marchand's Peroxide of Hydrogen (medicinal) or Glycozone.

Treatment of Asthma.—By means of Ch. Marchand's Hand Atomizer and Ozonizer, inhalations of ozonized vapor should be administered three to six times daily. Any similar apparatus made of metal should never be used in connection with Marchand's Peroxide of Hydrogen (medicinal).

The action of vaporized Marchand's Peroxide of Hydrogen (medicinal), or ozonized vapor, upon the diseased surface of the bronchial tubes or the cells of the lungs is similar to the action of this bactericide upon any open sore or ulcer which is invaded by microbes. The microbian element is destroyed at the contact of ozone, which is set free, and the diseased tissues are purified and made healthy.

The mixture for inhalations which has given the most satisfactory results is made of

one-half Marchand's Peroxide of Hydrogen (medicinal),
mixed with one-half chemically pure glycerine.

Mix well together by shaking the bottle, and renew this mixture every two days.

The duration of each inhalation should not exceed ten minutes, and after each inhalation, during the winter, the patient should remain in-doors for fifteen or twenty minutes.

In many cases of long standing it will be found very beneficial to the patient to take internally every day two or three tumblerfuls of ozonized water made of

1 ounce Marchand's Peroxide of Hydrogen (medicinal)
with 2 pints of water.

This will cleanse and purify the stomach and regulate the bowels.

Bronchitis—Treatment.—By means of Charles Marchand's Hand

Atomizer and Ozonizer three inhalations of ozonized vapor should be administered daily.

It is the most efficacious local treatment which can be prescribed to subdue this disease, on account of the harmless, although very powerful, antiseptic and healing properties of Marchand's Peroxide of Hydrogen (medicinal).

It quickly checks profuse bronchial secretion, and by its stimulating action upon the diseased tissues of the bronchial tubes an absolute cure is effected in a very short time.

Mixture for inhalations:

> One-half Marchand's Peroxide of Hydrogen (medicinal)
> with one-half chemically pure glycerine.

This mixture should be made perfect by shaking the bottle, and renewed every three days.

And as a beverage, drink daily three or four tumblerfuls of ozonized water made of

> 1 ounce Marchand's Peroxide of Hydrogen (medicinal)
> mixed with 2 pints of water.

This beverage will have the most beneficial effect upon the stomach, which is always more or less affected by droppings from the throat.

In this malady Marchand's Peroxide of Hydrogen (medicinal) destroys the microbes or germs which are the cause of the disease, the unhealthy secretions of the bronchial tubes disappear, and the diseased tissues are made healthy.

Whooping-cough—Causes.—Dr. Burger, of Bonn, Germany, and Dr. Affanassieff, of Russia, have demonstrated the presence of micro-organisms in Whooping-cough sputum. Dr. Affanassieff has prepared, with all the precautions, for microscopical experimentation, a small portion of the expectoration of a Whooping-cough patient, which showed large numbers of short rod bacteria, part singly, partly in two and of larger chains.

With pure cultures of these rod bacteria the investigator has made several experimental inoculations upon animals. A solution of this culture upon agar-agar, at least eight days old, in one-half a cubic centimetre of common salt, was made and injected into the windpipe or lungs of dogs and rabbits, of course under antiseptic precautions.

The animals all contracted a disease similar to Whooping-cough, often complicated with Broncho-pneumonia.

Several died, and the autopsy showed that the mucous membranes of the bronchi, of the trachea, and even of the nose, are the chief seats of the injected bacteria.

This same bacterium was found in the lungs and respiratory mucous membranes of children who died of Whooping-cough.

Dr. Affanassieff considers it to be the true cause of Whooping-cough, and names it the "*bacillus tussis convulsivæ.*"

Dr. Schwenker (London *Lancet*, January 7, 1888) and Dr. Wenat (*Medical News*, June 2, 1888) have confirmed Dr. Affanassieff's observations.

One hundred cubic centimetres of the pure culture, containing a considerable quantity of the above-mentioned micro-organisms, have been submitted to the action of three cubic centimetres of Marchand's Peroxide of Hydrogen (medicinal). The complete annihilation of the bacteria has been effected in less than seventy seconds of contact.

Treatment.—Whooping-cough, being caused by a microbian affection, requires antiseptic treatment; and Marchand's Peroxide of Hydrogen (medicinal), applied in the following manner, will effect promptly an absolute cure:

First—Spray frequently and copiously the nose, throat, pharynx, and larynx with a mixture made of

1 tablespoonful of Marchand's Peroxide of Hydrogen (medicinal)
with 4 to 6 tablespoonfuls of water (cold or lukewarm).

The patient may swallow some of the remedy without discomfort, as it is beneficial and perfectly harmless. Three to four applications every day will be sufficient in most cases.

Second—By means of the Hand Atomizer and Ozonizer, administer ozonized vapor three to six times daily, in order to insure the complete destruction of the microbian element in the respiratory organs.

The mixture for inhalations should be made of

half Marchand's Peroxide of Hydrogen (medicinal)
with half chemically pure glycerine.

Mix well together, and renew the mixture every three days.*

* The disorders of the stomach which often accompany this disease will always be surely prevented and cured by the use of Glycozone as an internal treatment. Dose: 1 teaspoonful of Glycozone, diluted in a wineglassful of water, three times daily.

Consumption, Phthisis, Tuberculosis of the Lungs—Causes.—It is a well-demonstrated fact that Consumption or Phthisis is caused by a microbe of a particular species which has been discovered by Dr. Koch, of Berlin, and which is called the Bacillus Tuberculosis of Koch.

Bacillus Tuberculosis
in Sputum × 1250 diameters.

With pure cultures of this bacillus, Dr. Koch and other scientific authorities have made experimental inoculations upon animals. A solution of this culture upon agar-agar was made and injected into the windpipe or lungs of dogs. The animals all contracted the Tuberculosis of the Lungs or Consumption. This bacillus is located in tubercules, and it causes the formation of ulcerated cavities of the lungs.

The bacillus tuberculosis is readily destroyed by antiseptic remedies; but although the annihilation of the microbian element is accomplished almost instantaneously by the action of Marchand's Peroxide of Hydrogen (medicinal), this remedy will not cure Consumption when the disease has reached such a degree of development that the lung tissue has broken down. In fact, if it should be possible to bring this remedy into contact with all parts of the lungs which are invaded by the bacillus, undoubtedly the cure of Consumption might be always effected by the ozonized vapor inhalations.*

Treatment.—Frequent and deep ozonized vapor inhalations should be administered three to six times daily, with a mixture of

2 to 3 tablespoonfuls of Marchand's Peroxide of Hydrogen (medicinal) with 1 tablespoonful of chemically pure glycerine well shaken.

Renew this mixture every three days.

* Whenever ozonized vapor is mentioned, it means "vapor produced by the Ozonizer from the mixture of Marchand's Peroxide of Hydrogen (medicinal) with chemically pure glycerine."

The duration of each inhalation should not exceed ten minutes, and inspiration should be as deep and as prolonged as possible. The remedy will reach the lungs if administered either through the nose or mouth, by means of Charles Marchand's Hand Atomizer and Ozonizer. (See page 18.)

Remain in-doors for fifteen to twenty minutes after each inhalation during the cold weather.

It is easy to understand that, the ozonized vapor coming into contact with the bacillus tuberculosis, located in the ulcerated cavities of the lungs, "ozone," which is set free, destroys the microbian element immediately, as explained before on page 7.

When Consumption has not taken developments beyond its first or second stages—that is, when the ulcerated cavities caused by the bacillus tuberculosis are limited and can be easily reached by the ozonized vapor—the above treatment prevents absolutely the spreading of the infection and a cure is effected. But in all cases of Consumption, no matter at what stage of the disease, the relief of the patient will be surely and quickly obtained by the Marchand Peroxide of Hydrogen treatment.

Ozonized vapor has no corrosive, toxic, or injurious action upon the healthy tissues of the lungs; on the contrary, it has very powerful stimulating properties. In addition to the inhalations, the administration of three tumblerfuls daily of ozonized water, made of

1½ ounces of Marchand's Peroxide of Hydrogen (medicinal)
with 2 pints of water,

after each meal, will be found very helpful to the relief of the patient.

Sore Throat, Angina, Quinsy, Tonsilitis, and all Inflammatory Diseases of the Throat.

Treatment.—Spray or gargle the throat copiously and frequently with a mixture of

1 tablespoonful of Marchand's Peroxide of Hydrogen (medicinal)
with 3 to 6 tablespoonfuls of water (cold or lukewarm).

You may swallow the remedy without discomfort, as it is rather beneficial. In case of Tonsillar Abscesses gargle more frequently (every two hours, for instance), in order to destroy surely and quickly the pus which is present.

Laryngitis.—Marchand's Peroxide of Hydrogen (medicinal) is certainly the safest remedy to apply in order to subdue this disease.

Spray or gargle three times every day with a mixture made of

1 tablespoonful Marchand's Peroxide of Hydrogen (medicinal) with 2 to 6 tablespoonfuls of water,

and swallow a portion of the remedy.

In many cases, ozonized vapor inhalations will accelerate the cure.

Pharyngitis.—Spray or irrigate copiously the pharynx three times every day with a mixture of

1 tablespoonful Marchand's Peroxide of Hydrogen (medicinal) with 3 to 7 tablespoonfuls of water;

swallow a portion of the remedy, and administer ozonized vapor inhalations morning and evening.

Appropriate internal medication may accelerate the cure.

Croup, Membraneous Croup.—This disease seems to be caused by the same specific virus as Diphtheria, but it shows a milder grade of infection.

When fully developed, whitish spots or membraneous exudations are observed in the larynx. After the membrane is once formed, if left alone it may be cast off in the form of a cylinder, in bands or shreds. Some recent experiments have proved that Marchand's Peroxide of Hydrogen (medicinal) destroys these membranes after a short contact, and by its curative properties the diseased surface is rendered healthy.

In case of Membraneous Croup, the nose, throat, mouth, pharynx, and larynx should be flooded every two hours with a mixture of

1 tablespoonful of Marchand's Peroxide of Hydrogen (medicinal) with 4 to 6 tablespoonfuls of water (cold or lukewarm).

The membranes are destroyed, and by using this remedy frequently and very freely you prevent their reproduction.

In this way the physician will observe that the inflamed parts are thoroughly and quickly cured, and there is no danger of the patient being exposed to the suffocation resulting from the development of these infected membranes.*

* As an internal treatment, 1 tablespoonful of Glycozone diluted in a wineglassful of water and taken three times a day will prevent any disturbance of the stomach and regulate the bowels.

Diphtheria—Causes.—Diphtheria is at first a local disease (see page 2), which is secondarily propagated to the general organism by a contagious virus located about the tonsils; this virus is an albuminoid substance invaded by a large number of bacteria called micrococci.

Marchand's Peroxide of Hydrogen (medicinal) destroys this virus instantaneously, and it has no injurious effects upon the surrounding healthy tissues.

These cuts illustrate a well-developed case of Diphtheria before and after its cure by use of Marchand's Peroxide of Hydrogen (medicinal). Time taken to destroy the micrococci was less than 70 seconds.

Magnified Diphtheritic Membrane, 800 Diameters. Figure 1 shows the bacteria called micrococci. Fig. 2 shows the fibrin.

Showing the same membrane after short contact with Peroxide of Hydrogen. The bacteria are destroyed; the fibrin remains normal.

Directions for Use.—Spray or gargle copiously, every two hours, the nose, throat, mouth, pharynx, and larynx with a mixture of

1 tablespoonful Marchand's Peroxide of Hydrogen (medicinal)
with 2 tablespoonfuls of water (cold or lukewarm).

It is beneficial to swallow the remedy, or a portion of it, in gargling.

The virus or germs are readily destroyed from the contact with Peroxide of Hydrogen (medicinal), and the contagion is therefore prevented.

When Diphtheria is well developed it is necessary to spray the child's nostrils, throat, mouth, pharynx, and larynx more frequently with a mixture made of

1 tablespoonful Marchand's Peroxide of Hydrogen (medicinal)
with 1 tablespoonful of water (cold or lukewarm.)

Dr. Geo. B. Hope of the Metropolitan Throat Hospital of New York, and many other leading physicians, recommend the use of Marchand's Peroxide of Hydrogen (medicinal) full strength, particularly when the disease spreads rapidly.

The remedy may be applied by means of a camel's hair brush (free from any metallic parts) or by means of an ordinary atomizer entirely made of glass or hard rubber.

Any portion of the remedy which finds its way into the larynx or stomach is beneficial rather than harmful.

Adults and children old enough to gargle the pharynx and rinse the mouth *will get a better effect in this way.**

Dyspepsia—Predisposing Causes.—Deficient gastric secretion, with resulting fermentation of food, is perhaps the most prevalent cause of dyspepsia.

The two main constituents of gastric juice, namely, acid and pepsin, may be deficient in quantity or disturbed in their relative proportions. A certain amount of acid is absolutely essential to the digestive process, while a small amount of pepsin may be sufficient to digest a large amount of albuminoid food.

Bidder and Schmidt have made repeated analysis of pure gastric juice, and their results are confirmed by the analysis of five specimens of gartric juice, free from saliva, and taken by Charles Marchand from dogs.

The gastric juice of a dog is composed of:

Water		968.20
Pepton and pepsin		17.12
Free muriatic acid		2.98
Alkaline chlorides		4.16
Ammonium chloride		0.51
Chlorine		5.16
Phosphates.	Lime	1.54
	Magnesia	0.28
	Iron	0.05

The most careful analysis proved beyond doubt that fresh gastric juice contains only one mineral acid—that is, muriatic acid.

* As an internal treatment, 1 teaspoonful of Glycozone diluted in a wineglassful of water, administered every three to four hours will prevent the microbian infection developing in the stomach of the patient, and that is a very important result to obtain in order to avoid the infection of the system.

Exciting Causes.—The profession well know that excess in eating and drinking, imperfect mastication and insalivation, the use of indigestible and unwholesome food and of alcohol, the imperfect arrangement of meals, over-drugging, etc., are chiefly the exciting causes of Dyspepsia, and indigestion is the immediate consequence. Constipation of the bowels is an almost universal accompaniment of deranged digestion, and when persistent for years it is apt to lead to the most disastrous consequences.

The most prominent of the local symptoms of Dyspepsia are: A sense of fulness and distention after eating, discomfort during digestion, lack of appetite and eructations, or heart-burn, flatulence, regurgitations of food, and sometimes, in acute cases, nausea and vomiting.

Now that I have resumed the causes of Dyspepsia, which produce a general inflammation of the coats of the stomach, the profession know that the innumerable remedies which have been recommended to subdue this disease may be classified as follows:

First—Remedies having a stimulating action upon the secretion and muscular coats of the stomach.

Second—Introduction in the stomach of a necessary amount of one or several of the constituent elements of the gastric juice, in order to make it normal.

Third—Remedies having the property to lessen the abnormal irritability.

Fourth—Remedies having the property to facilitate digestion.

It is evident that any remedy which will restore the coats of the stomach to their normal condition will contribute to effect an absolute cure, providing the patient will observe a proper regimen.

Glycozone, by its wonderful antiseptic and healing properties, not only prevents the fermentation of the food in the stomach, but it cures also the inflammation or irritation of the mucous membrane in a very short time. Consequently, the most powerful and efficacious treatment to be applied, in order to remove the causes of Dyspepsia, can be formulated as follows:

Before or after each meal administer 1 teaspoonful of Glycozone in a wineglass nearly filled with water, stirred and taken three or four times daily.

Use no other remedy.

The digestion is accomplished, from the beginning of its application

without the least discomfort. The relief is almost immediate, and a cure absolute, if earnestly used.

After a few days the secretion of gastric juice is made normal, and the most acute cases of Dyspepsia, those of long standing, are permanently cured within two to six months of this treatment, when all other remedies have failed.

Catarrh of the Stomach, or Gastritis, Chronic or Recent.—The mucous membrane of the stomach is usually the seat of this disease.

Among the direct exciting causes of gastric inflammation, corrosive poisons and the excessive use of alcohol are recognized to be more prevalent than any others.

Chronic Catarrh of the Nose is often the cause of Gastritis on account of the large quantity of infected secretions which, after developing in the nasal cavities, find their way into the stomach.

The immediate consequence of that dropping is to produce an inflammation of the coats of the stomach, and little by little the microbian infection produces a general morbid condition having the symptoms of Catarrh of the Stomach.

In cases of acute Catarrh of the Stomach the autopsy shows that the mucous membrane is covered with a thick, tenacious, stringy mucus ; the secretion of gastric juice is very imperfect, and the digestion of food cannot be accomplished.

Glycozone, by destroying the morbid element which is the cause of this disease, rapidly subdues the inflammatory condition of the coats of the stomach, and then the mucous membrane, being restored to its normal state, the secretion of the gastric juice will become regular, and the digestion will not be disturbed any more.

Treatment.—Administer, three or four times daily, before or after each meal,

1 to 2 teaspoonfuls of Glycozone,

diluted in a wineglassful of water, well stirred.

This treatment will never fail to accomplish an absolute cure within two to six months, providing the physician will impress upon the mind of his patient that he should take his meals regularly and with sobriety.

Ulcer of the Stomach.—This disease is due to various causes, of which the immediate effect is to interfere with the digestion.

Vomiting of food is an indication of Gastric Ulcer, and in severe cases it is followed by hemorrhage.

The gastric juice is secreted with deficiency, and in order to remove the cause of this disorder a powerful antiseptic treatment is required.

The most satisfactory results are obtained :

First—If the patient use as a beverage a small quantity of ozonized water at each drink, this ozonized water being made of

1 ounce of Marchand's Peroxide of Hydrogen (medicinal)
with 2 pints of water.

The microbian element is readily destroyed by the small quantity of ozone which is set free at the immediate contact of the ulcerated surface.

Second—The healing part of the treatment consists in the administration of

1 to 2 teaspoonfuls of Glycozone

diluted in a wineglassful of water, three or four times daily, before or after eating.

This treatment is absolutely harmless, and the relief of the patient is obtained almost immediately.

An absolute cure is effected within two to six months.

Scarlet Fever—Causes.—It is a proven fact that this disease is caused by bacteria of the micrococcus species, as shown by the cut below, which illustrates a magnified portion of excretions of an ulcer of the larynx (800 diameters) taken from a Scarlet-fever patient.

Fig. 1 shows the bacteria of the scarlet fever.
Fig. 2 shows the fibres of the tissue and globules.

Every physician knows that Scarlet Fever is a contagious affection to the highest degree, and that it may be communicated by anything that has touched the patient, such as air, food, clothing, sheets, furniture, curtains, etc. All discharges from bowels, kidneys, nose, mouth, eyes, ears, and skin are dangerous; and the poison may remain active for months or years by means of clothing packed away in drawers.

Treatment.—The germs which cause this disease are readily destroyed by Marchand's Peroxide of Hydrogen (medicinal); and the most powerful local medication is obtained in the following manner:

Spray or gargle the throat copiously and repeatedly every 2 to 3 hours with a mixture made of

1 tablespoonful Marchand's Peroxide of Hydrogen (medicinal)
with 3 to 5 tablespoonfuls of water (cold or lukewarm).*

As a preventive treatment for secondary infection: On the third day of Scarlatina Fever, the whole body of the patient should be washed, morning and evening, with equal parts of

Marchand's Peroxide of Hydrogen (medicinal)
and tepid water.

Use a porcelain dish and a clean soft sponge.

This local treatment does not preclude the internal medication, which may be deemed necessary by the attending physician.

Typhoid Fever—Causes and Treatment.—It is a well-known fact that contaminated water is the cause of this disease.

The following cut illustrates the typhoid bacille, magnified 1250 diameters, from pure culture:

* As a beverage, Glycozone should be administered three times daily. Dose—1 teaspoonful diluted in a wineglassful of water.

Marchand's Peroxide of Hydrogen (medicinal) destroys those microbes instantaneously. Consequently, a beverage made of

1 ounce Marchand's Peroxide of Hydrogen (medicinal)
with 2 to 3 pints of water

constitutes the most efficacious and powerful antiseptic treatment, which always prevents both pyæmia and septicæmia.* (See report of Dr. H. F. Wiggin, p. 75, also article headed Cholera—Typhus, page 44.)

This antiseptic medication does not preclude the general treatment which may be prescribed by the attending physician.

Anthrax—Carbuncle.—This affection, which is caused by the Bacillus Anthracis, is at first a local disease which requires a very powerful antiseptic treatment, immediately after the carbuncle has been opened by a surgical operation or otherwise.

The following cut illustrates the Bacillus Anthracis, magnified 1250 diameters, from pure culture:

Bacillus Anthracis × 1250 diameters.

The Bacillus Anthracis is readily destroyed by Marchand's Peroxide of Hydrogen (medicinal.)

Treatment.—Wash or irrigate the sore, morning and evening, with Marchand's Peroxide of Hydrogen (medicinal), full strength, taking great care that the liquid should be thrust into the discharging sinuses, in order to secure the complete destruction of the microbian element; the pus is also destroyed, and the cleansing of the sore is made perfect.

As a local dressing a double thickness of surgical lint should be

*Glycozone, administered three times daily in the proportion of 1 teaspoonful diluted in a wineglassful of water, will prevent the disorders of the stomach.

soaked into Glycozone and applied to the sore; and an over-covering of oiled silk should be used.

The above local treatment does not exclude the internal medication.

Yellow Fever.—According to the recent researches made by Dr. Paul Gibier, of the Faculte de Medicine de Paris, France, it seems to be a positive fact that Yellow Fever is caused by bacteria which are located in the intestines. This theory being supported by other prominent bacteriologists, the most logical treatment, in order to subdue this intestinal infection, is to administer some laxatives in connection with antiseptic remedies. (See article headed Cholera-Typhus p.44.)

The use of bichloride of mercury solution has been recommended as a rectal injection, although it should be absolutely condemned, owing to its corrosive and toxic properties.

A 3 per cent. solution of bichloride of mercury is equivalent, as a bactericide, to a 2 per cent. solution of Peroxide of Hydrogen (medicinal). Then 1 per cent. solution of Peroxide of Hydrogen (medicinal), which corresponds to a 4¾ volume capacity, has the same bactericide power as a 1½ per cent. solution of bichloride of mercury. (See on page 8, "Comparative Tests.")

Treatment.—By means of a glass or hard rubber syringe the physician should prescribe a rectal injection, administered three times daily, with one pint of a mixture made of

2 ounces of Marchand's Peroxide of Hydrogen (medicinal)
with 1 pint of lukewarm water;

and he will obtain the same disinfectant action as he would obtain by using half a pint of a 1½ per cent. bichloride of mercury solution. The use of such a quantity of bichloride of mercury should evidently kill both the germs of the disease and the patient.

WOMEN'S WEAKNESSES.

Whites, Leucorrhœa, etc.—These very troublesome and painful diseases require not only an appropriate internal medication, but also a powerful local antiseptic treatment.

All the remedies prescribed to subdue these affections are more or less injurious on account of their corrosive, irritating, or poisonous

properties; and, in fact, they produce very often an aggravation of the disease.

On the contrary, Marchand's Peroxide of Hydrogen (medicinal), which is more powerful than any one of these antiseptics (see page 8, "Comparative Tests"), has, by its stimulating action upon the diseased mucous membrane of the vagina, a prompt and curative effect.

Treatment.—By means of either a glass or hard rubber syringe, copious injections should be administered at least twice daily, morning and evening, with a mixture of

1 to 3 ounces of Marchand's Peroxide of Hydrogen (medicinal)
with 1 pint of lukewarm water,

according to the tenderness of the infected surface.

The above treatment will promptly accomplish an absolute cure where all other remedies have failed.

In cases of acute inflammation or ulceration of the womb, injections should be administered copiously and repeatedly morning and evening, with a mixture made of

2 to 4 ounces of Marchand's Peroxide of Hydrogen (medicinal)
with 1 pint of lukewarm water.*

Abscess of the Vagina—Treatment.—In case of an abscess of the vagina, the profuse suppuration which follows a surgical operation, will be stopped by repeated injections administered with Marchand's Peroxide of Hydrogen full strength.

From the time the pus formation is checked, inject repeatedly the Peroxide (morning and evening) diluted in the proportion of

1 ounce of Marchand's Peroxide of Hydrogen (medicinal)
with 8 ounces of lukewarm water.

In order to secure a prolonged contact of the remedy with the diseased surface, the patient must lay down on her bed at the time she injects the remedy into the cavity.

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*Besides the Peroxide of Hydrogen treatment, in chronic cases it is necessary to apply the Glycozone on lint into the vagina morning and evening.

When the healthy granulations generate too quickly, under the stimulating action of the Peroxide, it is necessary to inject (three times every day) a weaker solution made of:

1 ounce Marchand's Peroxide of Hydrogen (medicinal).
with 16 ounces lukewarm water.

After the cleansing of the sore has been accomplished by the above treatment, apply glycozone on absorbent lint into the cavity.

Fistula (Recto-Vaginal)—Treatment.—At first inject Marchand's Peroxide of Hydrogen (medicinal) full strength until the discharge ceases being abundant. (See article by Dr. Lewis H. Adler, page 92, also article by Dr. Jos. M. Mathews, page 92.)

Then, morning and evening, inject into the cavity a mixture made of

1 part Marchand's Peroxide of Hydrogen (medicinal)
with 2 to 4 parts of lukewarm water.

The local dressing must be made with glycozone on absorbent lint.

Gonorrhœa.—This disease is known to be characterized by a local infection of the urethral canal, which is caused by bacteria of the gonococcus species.

These germs, as well as the unhealthy excretions which are present, are readily destroyed by Marchand's Peroxide of Hydrogen (medicinal), and the physician may prescribe three injections every day, to be administered by means of a glass or hard rubber syringe, with a mixture of

1 ounce Marchand's Peroxide of Hydrogen (medicinal)
with 4 to 8 ounces of water,

according to the degree of inflammation; retain this liquid in the canal for a few seconds.* (See p. 52, Report of Dr. E. Charest, also page 83, article by W. Roberts, U. S. A.)

The dangers of stricture resulting from the use of caustic or astringent remedies are absolutely avoided, and the cure is affected in half the ordinary time if the above treatment is earnestly followed.

*In case of chronic Gonorrhœa, or Gleet, besides the above treatment the physician should prescribe one injection every night with Glycozone.

The appropriate internal medication should be prescribed by the physician.

When the degree of inflammation of the urethra is excessive, each injection should be preceeded by cocaine or ether for the purpose of quieting the smarting.

LIST OF DISEASES WHICH ARE SUCCESSFULLY TREATED BY MARCHAND'S PEROXIDE OF HYDROGEN (MEDICINAL) AND BY "GLYCOZONE."

The fact that Marchand's Peroxide of Hydrogen (medicinal) is the most powerful pus-destroyer is so well known among physicians who have used it that it is acknowledged to be unsurpassed as a cleansing agent for pus-discharging surfaces, especially in cases otherwise difficult of access, for the instant it touches pus, "ozone" is set free, effervescence takes place, and continues until the pus is destroyed. Physicians may apply this remedy with perfect safety, and they will always obtain the most satisfactory results in the treatment of affections caused by germs or microbes.

For example, Marchand's Peroxide of Hydrogen should be applied to the treatment of the following diseases:

Open Boils, Open Abscesses, Phlegmonous Abscesses, Mastoid Abscesses, Ulcers (syphilitic or not), Scrofulous Sores, Cancerous Sores, Bed Sores, Local Gangrene, Broken Ampulla or Blisters, Aphthæ or Ulcerations of the Mouth, Stomatitis, Burns, Herpes Zoster or Zona, Eczema, Skin Diseases, Itch, Piles, Fistula, and all microbian affections.

Treatment.—As a rule, the above-mentioned diseases shonld be treated as follows:

First—By means of a glass dropper, or otherwise, apply Marchand's Peroxide of Hydrogen (medicinal) to the sore, and take care not to remove the white foam which is generated when this remedy comes in contact with the diseased surface; let it stand until it disappears, which occurs in a few minutes.

Then, by means of a glass dropper or a soft camel's hair brush, apply the Glycozone to the sore and cover it with a double thickness of surgical lint soaked in Marchand's Peroxide of Hydrogen (medicinal).

It is advisable to apply both Marchand's Peroxide of Hydrogen

(medicinal) and glycozone full strength, until the pus formation is checked.

When the discharge ceases being abundant, the Peroxide must be diluted with water and the glycozone should be thoroughly mixed with chemically pure glycerine, in order to prevent the healthy granulations from forming too quickly.

THE USE OF MARCHAND'S PEROXIDE OF HYDROGEN (MEDICINAL) IN DENTAL SURGERY.

Owing to its wonderful bactericide properties, Ch. Marchand's Peroxide of Hydrogen (medicinal) is the most powerful remedy to apply in order to cure the dental affections which are known to be caused by germs or microbes, such as, for example:

Alveolar Abscesses and Abscesses of the Inferior Maxilla.

Laceration, Inflammation, and Ulceration of the Gums; Stomatitis.

Necrosis and Caries of the Teeth.

The profession well know that the therapeutical agents used for the treatment of these diseases have been as follows:

Chloride of Sodium.—Salicylic Acid.—Chloride of Zinc.—Nitrate of Silver.—Creosote, and Carbolic Acid.

With the exception of chloride of sodium, which has no appreciable destructive action upon the microbian element, the other above-mentioned remedies are poisonous, and, owing to their corrosive properties, the dentists cannot always limit their action to the affected parts.

The creosote and carbolic acid have such an offensive odor that they should not be used at all. (See foot-note page 9, article headed, "The Dangers of Carbolic Acid.")

On the contrary, Charles Marchand's Peroxide of Hydrogen (medicinal) is absolutely harmless; it is almost odorless and tasteless.*

By the healing power of this wonderful remedy, the diseased surface is made healthy and the surrounding tissues remain in their normal condition.

It has no destructive action upon the enamel of the teeth.

A tooth, being submitted for several days to the action of Mar-

* It is used without danger or risk of poisoning the patient, and yet it is the strongest bactericide and purifier known. (See "Comparative Tests," page 4.)

chand's Peroxide of Hydrogen (medicinal) full strength, remains intact, but it is bleached.

GENERAL DIRECTIONS.

Alveolar Abscess and Abscess of the Inferior Maxilla—Treatment.—When an Alveolar Abscess is caused by any constitutional derangement, internal medication would necessarily have to be prescribed.

The local treatment demanded is such as will destroy the accumulated pus.

At first, the abscess should be broken by a surgical operation or otherwise, then the cleansing and destruction of pus will be accomplished instataneously, as follows:

By means of a silver, gold, or platinum syringe, administer into the cavity, morning and evening, one or two injections with a mixture of

1 part Ch. Marchand's Peroxide of Hydrogen (medicinal)
with 3 to 4 parts of water.

In the treatment of abscesses of the Inferior Maxilla, where there is no free egress for the pus and debris, much more energetic treatment is necessary. and the dentist need not hesitate to administer injections, morning and evening, with a mixture of

1 part Ch. Marchand's Peroxide of Hydrogen (medicinal)
with 2 parts of water.

In chronic cases, in order to prevent the sore from closing between two applications, floss silk or absorbent cotton impregnated with glycozone, should be applied immediately after each cleansing of the cavity.

Besides the above local treatment, the mouth should be kept clean by frequent washings with a mixture of

1 tablespoonful of Ch. Marchands Peroxide of Hydrogen (medicinal),
diluted in half a tumblerful of tepid water.

By following this treatment, the diseased tissues become healthy

after one or two applications, and an absolute cure is effected in half the ordinary time.

Laceration, Inflammation, and Ulceration of the Gums—Stomatitis—Treatment.—Charles Marchand's Peroxide of Hydrogen (medicinal) is the most powerful remedy which may be applied in order to subdue these very tenacious and painful affections.

It should be used freely and repeatedly as a tooth-wash, morning and evening, in the following proportion:

1 ounce Medicinal Peroxide of Hydrogen,
diluted with half a pint of water.

Rinse the mouth well, and retain this liquid in the mouth for one minute or so at each washing. No injurious action whatever upon the enamel of the teeth need be feared.

The gums are strengthened by this treatment, healthy granulations develop very rapidly, and an absolute cure is quickly effected.

When the above diseases of the gums are caused by constitutional derangement, internal medication would necessarily be prescribed.

Necrosis and Caries of the Teeth.—Caries is a vary common cause of Necrosis. Excessive medication, especially with mercury, will sometimes produce partial, and, occasionally, total Necrosis.

The profession know that the most common agents that injure the teeth are originated in the mouth by the decomposition of animal and vegetable food.

Inflammation of the mucous membrane of the mouth is a common result of diseased teeth.

The Caries may be constitutional or local, and, if constitutional, the dentist knows that it may be modified by therapeutic treatment of the general system.

In all cases of Caries, the aggravation of the disease will always be prevented by using frequently and copiously, as a tooth-wash, a mixture of

1 to 2 ounces of Ch. Marchand's Peroxide of Hydrogen (medicinal), with half a pint of water.

Rinse the mouth well, at least morning and evening, and retain this liquid in the mouth for one minute or so at each washing.

When the Caries is local, an absolute cure is promptly accomplished by the above treatment.

MARCHAND'S PEROXIDE OF HYDROGEN (MEDICINAL), USED AS A WASH IN THE TREATMENT OF THE INFLAMMATORY DISEASES OF THE EYES.

GLYCOZONE IS THE MOST POWERFUL HEALING AGENT FOR THESE CONTAGIOUS DISEASES.

Catarrhal Conjunctivitis, or Ophthalmia—Causes.—The profession well know that all forms of Conjunctivitis which are accompanied by secretion are caused by germs which develop under more or less favorable circumstances, producing a local infection which is contagious to the highest degree.

The virulence of the contagion increases with the impurity of the atmosphere, and this disease is communicated by conveyance of secretion from one to another, by towels, handkerchiefs, etc., with a prodigious rapidity.

Besides a proper ventilation, it is necessary to isolate sick people, and also to keep them perfectly clean, in order to prevent the contagion; for instance, when any form of Conjunctivitis appears in a public institution it is urgent to put all the affected persons apart from the healthy.

Numerous analyses which I have made in order to ascertain the nature of the remedies ordinarily applied in the treatment to this disease show that they are as follows:

Nitrate of Silver.—Sulphate of Zinc.—Sulphate of Copper.—Bichloride of Mercury.—Red Oxide of Mercury.—Carbolic Acid.—Alum.—Sugar of Lead.—Tannin.—Borax.—Boracic Acid.—Sulphate of Atropine.—Cocaine.

Although some of these remedies have a destructive action upon the microbian element which is the cause of this disease, such remedies should be condemned, owing to their corrosive and irritating properties. In some instances they have the most injurious effects upon the cornea, and very often destroy not only the germs of the disease, but also weaken or destroy the optic nerves, and for this reason their use proves more dangerous than the disease itself.

Tannin, borax, and boracic acid are not dangerous remedies; but their bactericide power is so feeble that a cure could not be effcted by their action, since they cannot remove the cause of the infection.

On the contrary, Marchand's Peroxide of Hydrogen (medicinal) removes the cause of the disease, and Glycozone, by its strengthening and curative action, makes the mucous membranes of the eye grow stronger daily.

Treatment.—First the eyelids should be cleansed by a thorough washing made with a mixture of

1 ounce Marchand's Peroxide of Hydrogen (medicinal)
with 2 pints of lukewarm water;

then, by means of a glass dropper, apply to the inner portion of the eye, next to the nose, one, two, or more drops of Glycozone every night before retiring and the first thing in the morning.

If no dropper is at hand, apply the remedy with a soft camel's-hair brush, dipped in the Glycozone, to the outer edge of the eye, with an outward motion of the brush, or it may be applied with the finger. In whatever manner the Glycozone is applied, it penetrates the inner surface of the eye by simply opening and shutting the eye repeatedly for a few times.

At first it causes smarting, and often very severe pain for a few seconds, but it is only momentary and soon passes away.

Purulent Conjunctivitis — Ophthalmia Neonatorum, or Ophthalmia in Children.—The oculists well know that the Ophthalmia Neonatorum, or Ophthalmia in Children, is much more dangerous in its consequences than the Catarrhal Conjunctivitis.

This disease, which is the most frequent source of blindness in children, can always be cured if treated as follows:

First cleanse the eyelids by a thorough washing with a mixture of

1 ounce Marchand's Peroxide of Hydrogen (medicinal)
with 1 pint of lukewarm water.

This should be done three times, or at least morning and evening, every day.

Each cleansing should be immediately followed by the application of Glycozone. (See explanations given on page 40, article headed "Catarrhal Conjunctivitis.")

Granulated Eyelids.—Same treatment as Catarrhal Conjunctivitis

In all diseased conditions of the eyes the patients should expose themselves to air-draughts or bright light as little as possible, and the bowels should be kept open by a suitable internal medication.

SUPPURATIVE AND INFLAMMATORY DISEASES OF THE EAR—TREATMENT BY MARCHAND'S PEROXIDE OF HYDROGEN (MEDICINAL) AND "GLYCOZONE."

Owing to its wonderful bactericide properties Marchand's Peroxide of Hydrogen (medicinal) is of great value in cases of obstinate chronic suppuration of the middle ear, especially in such cases where it is difficult to reach all the suppurating tract by any local agent.

The fact that it can be forced through the osseous sinuses without danger highly commends its value in the different diseases just mentioned.

In case of profuse suppuration, the cleansing and destruction of pus should be made perfect by applying the remedy in the following manner:

By means of either a glass or a hard rubber syringe inject into the cavity, morning and evening, half an ounce of Marchand's Peroxide of Hydrogen (medicinal), full strength; let the remedy act during two or three minutes, and then apply into the ear, as a dressing, a small quantity of absorbent cotton well impregnated with Glycozone.

Two washings with Peroxide of Hydrogen and two dressings with Glycozone, applied every day, will cure the most obstinate chronic case in a very short time.

When the disease is not chronic, the suppuration being relatively limited, instead of applying Marchand's Peroxide of Hydrogen (medicinal), full strength, it should be diluted with lukewarm water, in the proportion of half-and-half.

The local dressing should be always made with pure Glycozone, as heretofore explained. (See article headed Peroxide of Hydrogen and its use in Ear Diseases, by Dr. Walter B. Johnson, page 91.)

INFLAMMATORY DISEASES OF THE BLADDER. PURULENT CYSTITIS. TREATMENT BY MARCHAND'S PEROXIDE OF HYDROGEN (MEDICINAL) AND GLYCOZONE.

Cystitis may be acute or chronic; it is always caused by germs.

In all cases of Cystitis the internal medication should be earnestly observed, and the patient should not drink irritating beverages.

The profession well know that the remedies ordinarily applied in the local treatment of this disease have rather palliative than curative properties.

In Peroxide of Hydrogen (Medicinal) we have a remedy which readily destroys the pus, and also the microbian element which is the cause of the disease.

Peroxide of Hydrogen (Medicinal) will always prevent the development of any affections which very often accompany Cystitis, such as Phlebitis, Nephritis and Gangrene of the bladder.

Treatment.—By means of a double current hard rubber catheter, irrigations of the bladder should be made at least twice daily, morning and evening, with six to eight fluid ounces of a mixture made of

two ounces of Marchand's Peroxide of Hydrogen (Medicinal)
with one pint of tepid water.

At the beginning of the treatment of the chronic Cystitis, one ounce of Marchand's Poroxide of Hydrogen (medicinal) full strength should be injected into the bladder, every day.

By using the double current catheter the gas which generates into the bladder finds its way out through the outlet opening.

In cases of urethritis and also in cases of acute inflammation or ulceration of the bladder, when the pain is very great, Dr. Robert T. Morris, of New York, recommends that the application of Peroxide of Hydrogen should be preceeded by Cocaine or Ether, for the purpose of quieting the smarting. (See article headed, "The Necessary Peroxide of Hydrogen, by R. T. Morris, M. D.," p. 55.)

In addition to the above local treatment with Peroxide of Hydrogen, the introduction into the bladder of a small quantity of Glycozone will always accelerate a cure.

Every evening before retiring, inject into the bladder one fluid ounce of the following mixture:

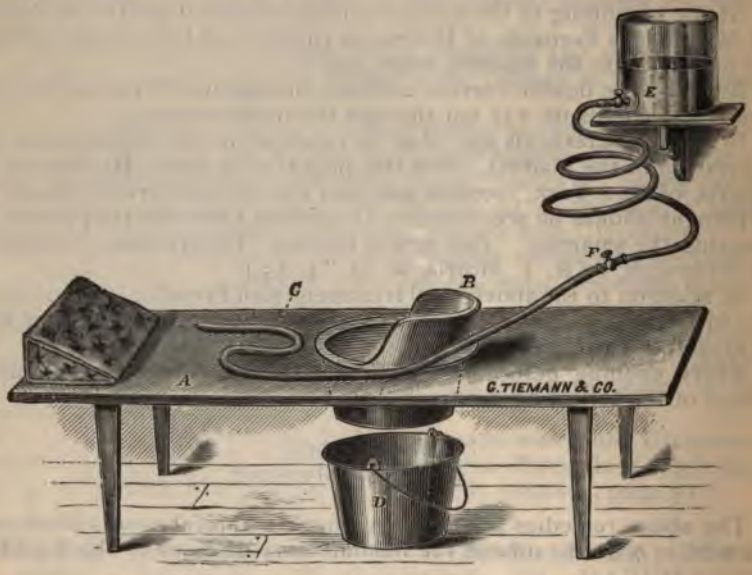
half Glycozone,
half C. P. Glycerine.

The above remedies are the most powerful topical agents which can be used in order to subdue the inflammatory diseases of the bladder.

CHOLERA:—TYPHUS AND DISEASES OF THE ALIMENTARY TRACT CAUSED BY MICROBES.

Treatment.—Elmer Lee, A. M., M. D., of Chicago, Ill., reports in the *New York Medical Record*, December 17th, 1892, some practical experiments in the treatment of cholera by irrigation of the intestinal canal.

The following cut illustrates his process used at St. Petersburgh, Russia, during the recent epidemic there, 1892.



The irrigation is accomplished by means of a soft rubber tube F, one metre in length and of suitable size to be introduced into the rectum, in front of the promontory of the sacrum, into and up through the sigmoid flexure and into the descending colon. This tube which is connected with a glass reservoir E (see cut), should not be too small nor too large, in order to facilitate its introduction through the folds of the sigmoid portion of the lower bowel. In fact, the greatest diffi-

culty to be encountered, is to successfully pass the tube in front of the promontory of the sacrum, and enter it into the sigmoid flexure. The tube should be of proper firmness to prevent it from bending or buckling upon itself when the end, (which in all cases should be rounded), comes in contact with the obstructing folds of the intestine.

Dr. Lee reports very satisfactory results from a thorough irrigation of the intestines with lukewarm water containing a small proportion of liquid soap made of vegetable oil, potash, and glycerine, in connection with peroxide of hydrogen (medicinal), as an internal treatment.

By following Dr. Lee's system of irrigation of the intestinal canal, with a large amount of the above solution (two to three gallons), the whole amount of infected matter which is present in the intestinal canal, is mechanically carried away; after which, by a second thorough irrigation of the intestinal tract with one to two gallons of lukewarm water containing 4 per cent. of Marchand's peroxide of hydrogen (medicinal), any coma-bacilli which may remain in the intestinal tract will be readily destroyed.

In addition to irrigation or washing out of the intestines, Dr. Lee administers internally peroxide of hydrogen (medicinal), two ounces diluted with eight ounces of distilled water, in cupful doses every three hours. The addition of distilled water is made in order to increase the bulk of fluid in the stomach.

It is but justice to credit Dr. Elmer Lee with the first practical application of irrigation, in the treatment of infectious diseases of the alimentary tract.

The report of his experience at St. Petersburgh, forms a most valuable contribution to the medical literature of the day. This treatment being practically the removal of poisonous matter and a local extermination of the coma-bacillus by means of a bactericide which has no deleterious effect upon animal cells, is based upon logical grounds and cannot fail to receive the attention of all scientific men.

In consequence of the results obtained by Dr. Lee, it is reasonable to conclude that similar treatment in case of typhus, yellow fever and other infectious diseases of the alimentary tract, will prove most efficacious.

IMPORTANT INFORMATION REGARDING GLYCOZONE.

Glycozone is a stable compound resulting from the chemical reaction which takes place when C. P. glycerine is submitted under special conditions, to the action of fifteen times its own volume of ozone, under normal atmospheric pressure at a temperature of O° C.

The presence of water (and other foreign substances) in the glycerine, changes the nature of this reaction, so that instead of producing glycozone, we obtain formic acid, glyceric acid, and other secondary products having deleterious effects upon the animal cells.

Glycozone being hydroscopic, must be tightly corked, so as to avoid being deteriorated by the moisture contained in the atmosphere.

Although glycozone absorbs water readily, it does not deteriorate when kept at a temperature of 110 degrees F as long as it retains its proper anhydrous condition.

The therapeutic properties of glycozone and Marchand's peroxide of hydrogen (medicinal) differ in the following particulars:

Peroxide of hydrogen (medicinal) instantly destroys the morbid elements of diseased surfaces of the skin or of the mucous membrane with which it comes in contact, leaving the tissues beneath, in a healthy condition.

On the contrary, glycozone acts more slowly, but not less certain as a stimulant to healthy granulations. Its healing action upon diseased mucous membrane is powerful and harmless in the treatment of inflammatory diseases of the stomach. In such cases it gives an immediate relief to the patient. (See Dyspepsia, page 27.)

In chronic inflammation of the intestines, a rectal injection administered every day with a mixture composed of

℞ Glycozone, ʒ 1
Lukewarm water, ʒ 12

soon relieves obstinate conditions.

A syringe made exclusively of hard rubber or glass, should be used in all instances where either peroxide of hydrogen (medicinal), or glycozone is used as an enema.

After any diseased or suppurating surface has been cleansed by peroxide of hydrogen (medicinal), the application of glycozone stimulates healthy action, and accelerates a cure.

General Directions for Use.—Glycozone may be given for diseases of the stomach, in doses of one to two teaspoonfuls in a wineglassful of water immediately after each meal. In catarrhal diseases, it should be applied in full strength as often as required.

As an application to wounds and suppurating surfaces it should be used without dilution. For further directions see information under the different diseases mentioned in this pamphlet.

Caution.—Glycozone is a peculiar chemical compound, and not a mixture of peroxide of hydrogen (medicinal) with glycerine.

These two liquids when mixed do not form a stable product, but develop substances which have injurious effects upon animal cells.

Such a mixture when freshly made, has no healing properties similar to glycozone. On the contrary glycozone is stable, harmless and always effective.

OPINION OF THE MEDICAL PROFESSION.

SEE a report on Hydrogen Peroxide, read at the Indiana Institute of Homœopathy, May 19, 1885, published in the *Medical Era*, July, 1885, and republished in response to numerous requests, after having been revised, in the number issued April, 1886. By Wm. B. Clarke, M.D., Indianapolis, Ind.

In this very elaborate article Dr. Wm. B. Clarke says: "I have used several makes of Peroxide of Hydrogen, foreign and domestic, and find the purest and best to be Ch. Marchand's Peroxide of Hydrogen (medicinal)."

See also a report on Hydrogen Peroxide read before the New York Society for Medico-Scientific Investigation, by W. W. Blackman, M.D., Brooklyn, N. Y. This report is published in the *North American Journal of Homœopathy*, July, 1886, pp. 554 to 564.

SOME CLINICAL FEATURES OF DIPHTHERIA AND THE TREATMENT BY PEROXIDE OF HYDROGEN.

BY GEORGE B. HOPE, M.D., NEW YORK.

Surgeon Metropolitan Throat Hospital; Professor Diseases of Throat, University of Vermont.

(Extract from the *New York Medical Record*, October 13, 1888.)

The sentiment, so long divided, with regard to the constitutional or local inception of diphtheria, seems to be now almost universal in the direction of the latter theory. Consequently, in the light of this opinion, it is clear that the rational treatment must rest more on the recognition of some local agent which will surely destroy the specific germ before a full development of the constitutional infection is reached, rather than on any system of general medication which might be presumed to act more or less as an antidote in combatting the septic influences occurring in the course of the disease. . . . .

On account of their poisonous or irritant nature, the active germicides have a utility limited particularly to surface or open-wound applications, and their free use in reaching diphtheritic formations in the mouth or throat, particularly in children, is unfortunately not within the range of systematic treatment. In Peroxide of Hydrogen, however, it is confidently believed will be found, if not a specific, at least the most efficient topical agent in destroying the contagious element and limiting the spread of its formation, and at the same time a remedy which may be employed in the most thorough manner without dread of producing any vicious constitutional effect. Although the Peroxide is by no means of recent date, its medicinal value has been chiefly confined to the cleansing of foul ulcers and suppurating wounds, and there is hardly more than a casual mention of its utility in the treatment of diphtheria previous to a paper of Dr. Mount Bleyer on this subject.* Quite independently of these observations, somewhat over eighteen months since, at the Metropolitan Throat Hospital, several cases of well-marked buccal diphtheria were treated with the

* *The Medical Record*, August 13, 1887.

Peroxide, with the effect of confirming in the most satisfactory manner the results obtained by Dr. Bleyer. The report of these cases was consequently omitted, pending the experiences it was supposed others would be quick to furnish on a more extended scale of the new remedy so warmly advocated. Among the somewhat small number of trial cases which have appeared at various times in the medical press, there are none in which a distinctly negative opinion is expressed, and where only a partially satisfactory result is attained there has appeared to be sufficient cause to permit a reasonable explanation for the fact. . . . .

A further explanation for the uncertain results attending the use of the Peroxide lies in the direction of the preparation itself, as also in the manner of its topical application. The usual descriptions allow the diluted strength of from three to seven volumes of distilled water. Inasmuch as the efficacy depends upon the ozonized oxygen in solution, it has seemed desirable to rely on the full strength of the officinal preparation of fifteen volumes, especially when used in the fauces, where any slight irritation from its acidity is not apparent. In all the cases treated, a fresh, standard Marchand's preparation of fifteen volumes was that on which the experience of the writer has been based. An equally important element is in making the application in such a manner as to produce the most determined effect on the diseased tissues with as little local disturbance as possible. Swabbing the tonsils and pharynx is the rough and ready method commonly resorted to, with the second motive of detaching, if possible, the membranous formation. Such treatment is not only unnecessarily harsh toward the patient, but also in intrinsic efficacy falls far short in securing the best therapeutic value of the remedy. It is properly recognized that the removal of the membrane, unless it occurs spontaneously, is not favorable to the local conditions; moreover, the glairy mucus coating the surface does not permit the application to come fairly in contact with the disease, or so superficially as to require the most constant repetition. The latter criticism holds the same bearing, only modified in a degree, to the hand-ball vapor and spray-producing instruments that have been recommended.

A steady, coarse spray, with an air-pressure of twenty pounds or more, will in a few moments' time produce a more positive action than prolonged efforts to reach the fauces by means of cotton applicators. The force of the spray should be sufficient to cleanse at once the surface accumulations, as it destroys the necrosial elements with which it comes in contact. In this manner the removal of the *debris* and the action on the deeper structure go hand in hand.

It will be noticed that immediately on contact with the Peroxide, a white, cloudy coagulum is formed on and about the diphtheritic patches, readily floated off and exposing a more sharply defined and a flatter, smooth and whiter base. Properly speaking, there is no liquefaction of the exudation, but the decomposition of the inflammatory products is so complete that the cells are broken up and freed from the entangling fibrous net-work beneath. In a particular instance, in the case of apparently a continuous diphtheritic slough, involving the tonsils and extending in an unbroken line across the margin of the soft palate, a solitary application exhibited this effect to such a degree that the natural color of the mucous membrane appeared in spots as if the exudation might have bridged across sound tissue without as yet securing attachment to the sub-epithelial layers.

How frequently the treatment is to be followed up depends to a considerable extent on the density as well as the area of the surface involved. It may be said, however, that two applications a day, in the great majority of cases, should be sufficient, if thoroughly performed, to arrest all danger of extension and accomplish the gradual resolution of the local formation.

If the experience of the writer is confirmed, it is apparent how much time, trouble and unnecessary handling is obviated when contrasted with the methods outlining hourly or half-hourly swabbing, or, as one has more frankly expressed it, "scrubbing," with nauseating applications, and culminating in the exhaustion of the patient, if not the most indifferent success. No reasonable objection can be raised

either on the score of the expense or the difficulty of transporting the apparatus necessary, as small portable air-receivers can be readily obtained in the instrument shops, on the model of those devised by Codman & Shurtleff, of Boston, and which for the purpose are equally efficient as the larger stationary office fixtures.

The more recent experience of Dr. Gifford (the *Medical Record*, September 1, 1888), establishing the active germicidal properties of Peroxide of Hydrogen, rapidly diminishing in proportion to its dilution in what might be called a geometrical ratio, appears to emphasize in a marked degree the clinical observations on which the main features relating to its employment have been based.

SOME PRACTICAL HINTS IN CONNECTION WITH INTUBATION OF THE LARYNX, AND A RÉSUMÉ OF 206 CASES OF DIPHTHERIA OPERATED ON FROM 1886 TO 1888.

By J. MOUNT BLEYER, M.D.

New York Medical Journal, February 2, 1888.

(*Extract.*)

. . . . *Irrigation.*—This is an admirable method of washing away the products of the local lesion. I use a No. 8 soft-rubber catheter which is attached to a fountain-bag syringe ; the catheter is passed into the nostrils, first the right and then the left. The solution which is used is made by taking Peroxide of Hydrogen (Charles Marchand's), fifteen volume solution, chemically pure, one ounce to twelve ounces of water. With this solution irrigate each nostril thoroughly. After this has been done, the next move is to wash out the mouth, pharynx, and larynx. If the child can be managed without forcing the mouth open, there is no need of the insertion of a gag ; but if not use it. The patient is to be held well forward over a basin for the reception of the returning fluid. Make a second mixture of the Peroxide of Hydrogen of the strength of four drachms to twelve ounces of water. The catheter is passed well down into the larynx, the surrounding parts, and thoroughly irrigated. The fluids are very seldom swallowed, and if this fluid mixture should be swallowed there is no danger of poisoning, as it is a perfectly harmless antiseptic. The fluid is generally immediately expelled by coughing. The mouth is to be kept wide open and the head well forward. By this mode of treatment patches of membrane, inspissated muco-pus, etc., can be washed away without difficulty and without pain. My experience with Peroxide of Hydrogen for the last four years has made me familiar with its varied use in the treatment of diseases of the nose and throat. From a consideration of the action of Peroxide of Hydrogen upon the deposit of diphtheritic membranes, and the rapid reproduction of bacteria, it will at once be evident that the earlier the application of the remedy is adopted, the better. While the membrane is thin and friable, the action of this agent is thorough, quick, and effective ; the deposit melts down before the contact of it like sugar in water, to be reproduced in a short time and again removed until the diseased tissue beneath can be plainly seen free from this characteristic covering. In this way, also, the spread of the membrane is checked and its limits often sharply circumscribed, until after some days, when the germinating power of the membrane is conquered and the poison ceases to produce its kind, no more deposit takes place, and the diseased tissues heal. In view of the rapid reproduction of bacteria already mentioned, it is evident that the applications should be no longer apart than two hours, or even less, according to the rapid reproduction

of the membranes. Gargling may be practiced by those who are able, but irrigation is preferred, as a more thorough application is thereby made. Irrigation is easily learned by the nurse, and there is absolutely no danger connected with its use. . .

For internal use I give the preference to Glycozone, which is chemically pure glycerine saturated with active ozone. It is to be used locally, as a substitute for bichloride of mercury, carbolic acid, permanganate of potash. This is the most powerful of all organic disinfectants and bactericides. I give to a child over two years of age half a teaspoonful of Glycozone, well diluted with water or milk, every two to four hours, and under that age twenty drops. . . .

ON THE MEDICINAL USES OF HYDROGEN PEROXIDE.

By E. R. SQUIBB, M.D., Brooklyn.

Read before the Kings County Medical Association, February 5, 1889, during the discussion on diphtheria, and published in Gaillard's *Medical Journal* for March, 1889, p. 267.

(*Extract.*)

Throughout the discussion upon diphtheria very little has been said of the use of the Peroxide of Hydrogen, or hydrogen dioxide, yet it is perhaps the most powerful of all disinfectants and antiseptics, acting both chemically and mechanically upon all excretions and secretions, so as to thoroughly change their character and reactions instantly. The few physicians who have used it in such diseases as diphtheria, scarlatina, small-pox, and upon all diseased surfaces, whether of skin or mucous membrane, have uniformly spoken well of it so far as this writer knows, and perhaps the reason why it is not more used is that it is so little known and its nature and action so little understood. Until within the last few years, except in a few manufacturing processes, it was chiefly known as a chemical curiosity, rarely seen because difficult to make. . . .

In order to use it intelligently both the pharmacist and the physician must know something of its nature and properties. The name hydrogen dioxide expresses its composition, and its formula, H_2O_2 represents this name. Hydrogen monoxide, H_2O, or water, can under certain conditions be made to combine with a second molecule of oxygen, the result being a water-like liquid, H_2O_2.

This second atom of oxygen is very loosely combined, and the compound molecule is always on a strain to break up into water and oxygen, and when it breaks up, either slowly or rapidly, the oxygen separates in that nascent or most active and potent of its conditions next to the condition known as ozone. It is in the change of this breaking up into water and active oxygen that the latter element exerts its power, and the simple contact with organic matters, which are themselves of complex nature and in condition to be changed, is sufficient to break up the dioxide and liberate the active oxygen. For example, some albuminoids are instantly changed by contact with hydrogen dioxide, as is shown by rinsing the mouth with a dilute solution, when the albuminoid matters of the secretions are at once coagulated. Then, as all virus is albuminoid, whether propagative or not, it is destroyed, or by coagulation rendered inert by simple contact with this agent, just as it is by contact with corrosive sublimate. This simple experiment of rinsing the mouth with a dilute solution of hydrogen dioxide and examining the discharged liquid can hardly fail to convince any one of the destructive potency of this active oxygen on some albuminoids, and of its thoroughly cleansing effects upon the mucous surfaces.

Now, if diphtheria be at first a local disease, and be auto-infectious—that is, if it be propagated to the general organism by a contagious virus located about the tonsils, and if this virus, be as it really is, an albuminoid substance, it may and will be

destroyed by this agent upon a sufficient and a sufficiently repeated contact. . . . All kinds of spray and injection apparatus can now be easily obtained with fittings of hard rubber or glass, and such only should be used.

A child's nostrils, pharynx, and mouth may be flooded every two or three hours, or oftener, from a proper spray apparatus with a two-volume solution without force, and with very little discomfort; and any solution which finds its way into the larynx or stomach is beneficial rather than harmful, and thus the effect of corrosive sublimate is obtained without its risks or dangers. Adults and children old enough to gargle the pharynx and rinse the mouth will get a better effect in this way, equally without much discomfort, from a three-volume solution; and this applies not only to diphtheria, but to scarlatina and other conditions of the mouth and throat which require cleansing and disinfecting. As vaginal injections in cases of uterine cancer, etc., the strength must be increased until the disinfectant effect is obtained. A copious flushing out with a one-volume solution will often be sufficient. When wetted cloths are laid over external sores an over-covering of oiled silk should be used.

As, in passing through several hands after leaving those of the maker, a little mismanagement may spoil the solution, some easily applicable tests of quality and strength are needed.

So long as the solution will yield any active oxygen at all, it will give this off with active effervescence when poured onto a crystal or two of potassium permanganate. A solution containing only a quarter of its volume will give an effervescence so strong as to be misleading, and therefore a quantitative test is needed. The following is a modification of a testing process given to the writer, with much other useful information by Mr. Charles Marchand, of No. 10 West 4th Street, New York City, one of the oldest and best makers of Peroxide of Hydrogen, and one who supplies it to all parts of the country. . . .

If this agent is to be generally used in the treatment of diphtheria, as it well deserves to be on well established principles of action, it is very important that it be freely applied in the earliest possible stages of the disease, or while it is yet local; and therefore the agent should be easily and promptly accessible in places known to physicians, and not over a mile apart throughout a city, and in hands which know the agent well, and know how to keep it from change and to dispense it on physicians' orders.

If all pharmacists should undertake to keep it—or even all the prominent ones—it would soon share the fate of many other important medicines. . . .

PEROXIDE OF HYDROGEN FOR GONORRHŒA.

REPORT OF DR. E. CHAREST.

(*Medical World*, Philadelphia, Pa., June, 1889.)

EDITOR *Medical World:*

I intended for some time to give to the readers of the *Medical World* my favorite treatment for gonorrhœa and gleet, and I will take the opportunity of Dr. H. E. Stroud's offer to do so now.

What I consider the simplest, quickest and least harmful treatment of gonorrhœa is Peroxide of Hydrogen in injection ℥ j to the ℨ of distilled water, three to five times a day.

Internally ten to fifteen grains of sodæ bicarb., every three hours, to keep the urine alkaline.

Walking to be avoided as far as possible, also beer, coffee, pepper, etc.; keep the bowels regular; use a syringe with tapered end and soft rubber tip for the injections.

The Peroxide of Hydrogen is used a good deal in commerce for bleeching purposes, so that there are different qualities of it on the market.

For medical use it must be neutral to the litmus paper, odorless and colorless.* This kind you may have from C. Marchand, 10 West Fourth Street, New York City. It must be kept at a temperature below 65° F., and no metal must come in contact with it.

In writing to the above-named firm you will receive a pamphlet on this valuable remedy well worthy to be studied.

I consider it the best germicide, as it is the least harmful and the most effective. For the past two weeks I have used it in the form of a spray, in one of the worst cases of eczema, of four years' standing, which had so far resisted the assaults of a dozen doctors backed up by as many drug stores, and is now almost well.

For syphilitic ulcers, soft chancres, diphtheria, ulcerated cervix, in fact, whenever there is pus or gems, this is the true remedy.

In gonorrhœa, when the penis is highly inflamed, use the injection four to five times a day and the inflammation will rapidly be subdued, leaving the urethra in a perfectly healthy condition. The use of a suspensory is a great relief to the patient.

The fl. ext. of black willow is very good for the erections.

It is also the remedy *par excellence* in gleet, and there is nothing like its inhalation to cut short a paroxysm of asthma.

I don't claim the Peroxide of Hydrogen ($H_2 O_2$) to cure gonorrhœa in three or eight days, for I don't believe there is anything that will do so without danger; but it will cure it in three weeks and leave the unfortunate in the best of condition.

R. CHAREST, M.D.

ST. CLOUD, MINN.

MEDICINAL USE OF HYDROGEN PEROXIDE.

(Editorial *New York Medical Record.*)

It is with pleasure that we peruse the new issue of *Squibb's Ephemeris* for July, 1889, confident as we are that whatever it tells us is in accord with the latest scientific advances, and is the result of careful thought and research. Among its articles is one by E. R. Squibb, on "Hydrogen Peroxide" (published also in *Gaillard's Medical Journal*, March, 1889). This substance which is one of the most powerful and at the same time the least harmful of all antiseptics and disinfectants, has never come into general use, probably because it is so unhandy and spoils so readily (Dr. Squibb thinks it is because it is so little known and so little understood). It is made in large quantities by several large firms, but is used chiefly in the preparation of secret remedies. Its properties have been known for a long time. It is a compound of hydrogen and oxygen which is easily decomposed, yielding water and nascent oxygen which quickly oxidizes substance with which it is in contact. The mere application of a solution of Peroxide of Hydrogen to certain albuminoid substances is sufficient to liberate its oxygen, which immediately coagulates the albuminoid substance within its reach. Thus all sorts of virus, whether propagative or not, are destroyed, or by coagulation rendered inert in its presence, just as when strong corrosive sublimate solutions are applied to them. The undiluted liquid peroxide is from its nature very unstable, and on slight disturbance breaks up into water and oxygen with almost explosive rapidity. Therefore it is never made nor used undiluted, but is always dissolved in water. The "Peroxide of Hydrogen" which is furnished to the physician is really a solution of the pure liquid in water to which a little hydrochloric acid has been added, the acid being necessary to prevent rapid decomposition of the peroxide. A solution which will yield its own volume of active (nascent) oxygen is called a one-volume solution. The fifteen-volume solution (yielding fifteen times its volume of nascent oxygen) is that which is generally

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* See page 5, article headed "Important Information on Peroxide of Hydrogen."

supplied by the makers. It is put up in pint bottles, containing about fifteen fluid ounces, sold at $9 a dozen. It is colorless and nearly odorless, tastes slightly acid, and leaves a slight fleeting, not unpleasant after-impression. Changes in this solution are indicated by the formation of bubbles of gas, which rise through the liquid or adhere to the sides of the bottle, and also by increased pressure within the bottles. At or below 59° F., the solution does not change for a long time. At 68° F., it does change, sometimes very rapidly, giving off oxygen gas. The solutions, whether strong or dilute, should be kept cool, outside of the window of the sick-room in winter, and on ice or in ice-water in summer. The bottles in which the solutions are contained must not be held in the hand for any considerable time, as its warmth will cause decomposition. It must not be kept in contact with metals, nor applied by means of metal apparatus, as it not only ruins the instruments, but forms poisonous salts from the metal. It does not attack hard rubber or glass. It is not necessary to apply it as strong as when it comes from the maker. The ordinary fifteen-volume solution sold is not injurious, but it is stronger than necessary, and to use it undiluted is wasteful. For the irrigation of a child's nostrils, pharynx, and mouth, a two-volume (made by adding two ounces of the fifteen volume solution to a pint of water solution, may be used every two or three hours, and any part of this solution passing into the stomach will do good rather than harm.

Adults and children who can gargle—especially in scarlatina and diphtheria—may use, as a gargle and mouth-wash, a three-volume solution (three ounces of fifteen-volume solution to a pint of water). For vaginal injections, as in cancer, etc., a thorough washing with the one-volume solution will often suffice, but it may be necessary to increase the strength until the desired effect is produced. When cloths wetted in a solution are laid upon external sores they should be covered with oiled silk. The methods for testing the activity of any solution are given in full, but need not be repeated here. Mr. Charles Marchand, of No. 10 West Fourth Street, New York City, is referred to as one of the best makers and furnishers of hydrogen peroxide. It is very necessary to get a good article, as careless preparation and after-handling may render it inactive. It is desirable that it should be applied very early when used in diphtheria, before the deposits in the throat have caused disease of the adjacent parts or of the general system.

PEROXIDE OF HYDROGEN FOR THE RELIEF OF BITES FROM VENOMOUS INSECTS.

(Page 148, *New York Medical Record*, February 8, 1890.)

Dr. Philippe Ricord, of Newark, N. J., writes:

"Recently, while charging my atomizer with the full strength of fresh standard Marchand's preparation of Peroxide of Hydrogen, at the bedside of a child suffering with diphtheria, my attention was attracted by the patient's mother, who appeared in pain, and stated that while taking up a blanket to wrap about her child she supposed she had been pricked by a needle, and on further examination discovered a hornet between the folds she had touched. Thereupon I immediately directed the Peroxide of Hydrogen spray into the wound, the surrounding tissues, in the few seconds that had elapsed, being swollen to such an extent as to distinctly mark its site. Instantly all pain ceased, and the swelling rapidly disappeared. In this case the wound was still sufficiently open to readily admit the Peroxide of Hydrogen, and the destruction of the virus was apparently in a moment so completely accomplished that no further treatment was afterwards required. May we not, therefore, infer that it is quite possible to annihilate many other poisons, likewise, by the prompt application of so powerful yet safe an agent as the Peroxide of Hydrogen?"

THE NECESSARY PEROXIDE OF HYDROGEN.

Read in the Section of Surgery and Anatomy, at the Forty-first Annual Meeting of the American Medical Association, held at Nashville, Tenn., May, 1890.

By ROBERT T. MORRIS, M.D., OF NEW YORK.

Published by the *Journal of the American Medical Association*, Chicago, August 9th, 1890, page 216.

Stop suppuration! That is the duty that is imposed upon us when we fail to prevent suppuration.

As the ferret hunts the rat, so does Peroxide of Hydrogen follow pus to its narrowest hiding place, and the pyogenic and the other micro-organisms are as dead as the rat that the ferret catches when the Peroxide is through with them. Peroxide of Hydrogen, H_2O_2, in the strong 15-volume solution, is almost as harmless as water; and yet, according to the testimony of Gifford, it kills anthrax spores in a few minutes.

For preventing suppuration we have bichloride of mercury, hydronaphtol, carbolic acid, and many other antiseptics; but for stopping it abruptly, and for sterilizing a suppurating wound, we have only one antiseptic that is generally efficient, so far as I know, and that is the strong Peroxide of Hydrogen.

Therefore I have qualified it, not as "*good*," not as "*useful*," but as "*necessary*." In abscess of the brain, where we could not thoroughly wash the pus out of tortuous canals without injuring the tissues, the H_2O_2 injected at a superficial point will follow the pus, and throw it out, too, in a foaming mixture. It is best to inject a small quantity, wait until foaming ceases, and repeat injections until the last one fails to bubble. Then we know that the pus cavity is chemically clean, as far as live microbes are concerned.

In appendicitis, we can open the abscess, inject Peroxide of Hydrogen, and so thoroughly sterilize the pus cavity that we need not fear infection of the general peritoneal cavity, if we wish to separate intestinal adhesions and remove the appendix vermiformis. Many a patient, who is now dead, could have been saved if Peroxide of Hydrogen had been used when he had appendicitis.

The single means at our disposal allows us to open the most extensive abscess psoas without dread of septic infection following.

In some cases of purulent conjunctivitis, we can build a little wall of wax about the eye, destroy all pus with Peroxide of Hydrogen, and cut the suppuration short. Give the patient ether, if the H_2O_2 causes too much smarting. It is only in the eye, in the nose and in the urethra that Peroxide of Hydrogen will need to be preceded by cocaine (or ether) for the purpose of quieting the smarting, for it is elsewhere almost as bland as water.

It is possible to open a large abscess of the breast, wash it out with H_2O_2, and have recovery ensue under one antiseptic dressing, without the formation of another drop of pus.

Where cellular tissues are breaking down, and in old sinuses, we are obliged to make repeated applications of the H_2O_2 for many days, and in such cases I usually follow it with balsam of Peru, for balsam of Peru, either in fluid form or used with sterilized oakum, is a most prompt encourager of granulation.

If we apply H_2O_2 on a probang to diphtheritic membranes at intervals of a few moments, they swell up like whipped cream and come away easily, leaving a clean surface. The fluid can be snuffed up into the nose and will render a fœtid ozœna odorless.

It is unnecessary for me to speak of further indications for its use, because wherever there is pus we should use Peroxide of Hydrogen. We are all familiar with the old law "*Ubi pus, ibi evacua,*" and I would change it to read "*Ubi pus, ibi evacua, ibi hydrogenum peroxidum infunde.*" That is the rule The exceptions which prove the rule are easily appreciated when we have them to deal with.

Peroxide of Hydrogen is an unstable compound, and becomes weaker as oxygen is given off, but **Marchand's 15-volume solution will retain active germicidal power for many months if kept tightly corked in a cold place.** The price of this manufacturer's preparation is about 75c per lb., and it can be obtained from any large drug house in this country. When using the H_2O_2 it should not be allowed to come into contact with metals if we wish to preserve its strength, as oxygen is then given off too rapidly.

H_2O_2 must be used with caution about the hair, if the color of the hair is a matter of importance to the patient; for this drug, under an alias, is the golden hair bleach of the *nymph's despare*, and a dark-haired man with a canary-colored moustache is a stirring object.

PEROXIDE OF HYDROGEN AND OZONE.

THEIR ANTISEPTIC PROPERTIES.

Read before the International Medical Congress, held at Berlin, Germany, on the 7th of August, 1890. Published by *Medical News* of Philadelphia, October 25th, 1890. Pp. 416–418.

By DR. PAUL GIBIER, *Director of the Pasteur Institute of New York.*

GENTLEMEN:

Since the discovery of Peroxide of Hydrogen by Thenard, in 1818, the therapeutical applications of this oxygenated compound seem to have been neglected both by the medical and the surgical professions; and it is only in the last twenty years that a few bacteriologists have demonstrated the germicidal potency of this chemical.

Among the most elaborate reports on the use of this compound may be mentioned those of Paul Bert and Regnard, Baldy, Péan and Larrivé.

Dr. Miguel places Peroxide of Hydrogen at the head of a long list of antiseptics, and close to the silver salts.

Dr. Bouchut has demonstrated the antiseptic action of Peroxide of Hydrogen, when applied to diphtheritic exudations.

Prof. Nocart, of Alfort, attenuates the virulence of the microbe symptomatic of carbuncle, before he destroys it, by using the same antiseptic.

Dr. E. R. Squibb,[1] of Brooklyn, has also reported the satisfactory results which he obtained with Peroxide of Hydrogen in the treatment of infectious diseases.

Although the above-mentioned scientists have demonstrated by their experiments that Peroxide of Hydrogen is one of the most powerful destroyers of pathogenic microbes, its use in therapeutics has not been as extensive as it deserves to be.

In my opinion the reason for its not being in universal use is the difficulty of procuring it free from hurtful impurities. Another objection is the unstableness of the compound, which gives off nascent oxygen when brought in contact with organic substances.[2]

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[1] *Gaillard's Medical Journal*, March, 1889.

[2] The Peroxide of Hydrogen that I use is manufactured by Mr. Charles Marchand, of New York. This preparation is remarkable for its uniformity in strength, purity and stability.

Besides the foregoing objections the surgical instruments decompose the peroxide, hence, if an operation is to be performed, the surgeon uses some other antiseptic during the procedure, and is apt to continue the application of the same antiseptic in the subsequent dressings.

Nevertheless, the satisfactory results which I have obtained at the Pasteur Institute of New York with Peroxide of Hydrogen, in the treatment of wounds resulting from deep bites, and those which I have observed at the French clinic of New York, in the treatment of phagedenic chancres, varicose ulcers, parasitic diseases of the skin, and also in the treatment of other affections caused by germs, justify me in adding my statement as to the value of the drug.

But, it is not from a clinical standpoint that I now direct attention to the antiseptic value of Peroxide of Hydrogen. What I now wish is merely to give a full report of the experiments which I have made on the effects of Peroxide of Hydrogen upon cultures of the following species of pathogenic microbes: Bacillus anthracis, bacillus pyocyaneous, the bacilli of typhoid fever, of Asiatic cholera, and of yellow fever, streptococcus pyogenes, micro-bacillus prodigiosus, bacillus megaterium, and the bacillus of osteomyelitis.

The Peroxide of Hydrogen which I used was a 3.2% solution, yielding fifteen times its volume of Oxygen; but this strength was reduced to about 1.5%, corresponding to about eight volumes of Oxygen, by adding the fresh culture containing the microbe upon which I was experimenting. I have also experimented upon old cultures loaded with a large number of the spores of the bacillus anthracis. In all caser my experiments were made with a few cubic centimetres of culture in sterilized test-tubes, in order to obtain accurate results.

The destructive action of Peroxide of Hydrogen, even diluted in the above proportions, is almost instantaneous. After a contact of a few minutes, I have tried to cultivate the microbes which were submitted to the peroxide, but unsuccessfully, owing to the fact that the germs had been completely destroyed.

My next experiments were made on the hydrophobic virus in the following manner:

I mixed with sterilized water a small quantity of the medulla taken from a rabbit that had died of hydrophobia, and to this mixture added a small quantity of Peroxide of Hydrogen. Abundant effervescence took place, and, as soon as it ceased, having previously trephined a rabbit, I injected a large dose of the mixture under the dura mater. Slight effervescence immediately took place and lasted a few moments, but the animal was not more disturbed than when an injection of the ordinary virus is given. This rabbit is still alive, two months after the inoculation.

A second rabbit was inoculated with the same hydrophobic virus which had not been submitted to the action of the peroxide, and this animal died at the expiration of the eleventh day with the symptoms of hydrophobia.

I am now experimenting in the same manner upon the bacillus tuberculosis, and if I am not deceived in my expectation, I will be able to impart to the profession some interesting results.

It is worthy of notice that water charged, under pressure, with fifteen times its volume of pure oxygen has not the antiseptic properties of Peroxide of Hydrogen. This is due to the fact that when the peroxide is decomposed nascent oxygen separates in that most active and potent of its conditions next to the condition, or allotropic form, known as "Ozone." Therefore it is not illogical to conclude that ozone is the active element of Peroxide of Hydrogen.

Although Peroxide of Hydrogen decomposes rapidly in the presence of organic substances, I have observed that its decomposition is checked to some extent by the addition of a sufficient quantity of glycerin; such a mixture, however, cannot be kept

for a long time, owing to the slow but constant formation of secondary products, having irritating properties.

Before concluding I wish to call attention to a new oxygenated compound, or rather ozonized compound, which has been recently discovered and called "Glycozone" by Mr. Marchand.

This Glycozone results from the reaction which takes place when glycerine is exposed to the action of ozone under pressure—one volume of glycerine with fifteen volumes of ozone produces Glycozone.

By submitting the bacillus anthracis, pyocyaneous, prodigiosus, and megaterium to the action of Glycozone, they were almost immediately destroyed.

I have observed that the action of Glycozone upon the typhoid fever bacillus, and some other germs, is much slower than the influence of Peroxide of Hydrogen.

In the dressing of wounds, ulcers, etc., the antiseptic influence of Glycozone is rather slow if compared with that of Peroxide of Hydrogen, with which it may, however, be mixed at the time of using.

It has been demonstrated in Pasteur's laboratory that glycerine has no appreciable antiseptic influence upon the virus of hydrophobia; therefore, I mixed the virus of hydrophobia with glycerine, and at the expiration of several weeks all the animals which I inoculated with this mixture died with the symptoms of hydrophobia.

On the contrary, when glycerine has been combined with ozone to form Glycozone, the compound destroys the hydrophobic virus almost instantaneously.

Two months ago, a rabbit was inoculated with the hydrophobic virus, which had been submitted to the action of this new compound, and the animal is still alive.

I believe that the practitioner will meet with very satisfactory results with the use of Peroxide of Hydrogen for the following reasons:

1. This chemical seems to have no injurious effect upon animal cells.
2. It has a very energetic destructive action upon vegetable cells—microbes.
3. It has no toxic properties; five cubic centimetres injected beneath the skin of a guinea-pig do not produce any serious result, and it is also harmless when given by the mouth.

As an immediate conclusion resulting from my experiments, my opinion is, that Peroxide of Hydrogen should be used in the treatment of diseases caused by germs, if the microbian element is directly accessible; and it is particularly useful in the treatment of infectious diseases of the throat and mouth.

HYDROGEN PEROXIDE IN DIPHTHERIA.

(Extract from the *New York Medical Journal*, December 6, 1890.)

1189 MADISON AVENUE, *November 8, 1890.*

TO THE EDITOR OF THE *New York Medical Journal:*

SIR:—I would suggest the following local treatment for diphtheria: The application to the membrane of Marchand's solution of Peroxide of Hydrogen, fifteen volumes, with an equal bulk of water, then scraping the membrane off with a curette and applying the Peroxide of Hydrogen, one-third dilution, every hour for six or seven hours, then every two hours If there is no reappearance of membrane after two days, spray the throat occasionally with an antiseptic spray. In this way the membrane is

removed at once. The operation is done at a period of the disease when there is no danger of heart failure, so that the struggles of a child need not be minded.

I am aware that the removal of the membrane in former years was regarded as somewhat dangerous, but at that time nothing was known of disinfectants and germicides.

It would seem that a remedy which, applied to the diphtheritic membrane, removed it after some hours, would prevent its formation. In tolerant patients the peroxide may be put on three or four times so as to be sure of complete disinfection before curetting. A small Thomas's uterine curette answers the purpose admirably. A patient treated as described was comparatively well in two days.

DAVID PHILLIPS, M.D.

PEROXIDE OF HYDROGEN.

(Extract from *Medical Summary*, December, 1890. Page 214.)

After trying for the past five years innumerable therapeutic agents for my lupus or epithelioma, I was advised by Dr. Cutter, a celebrated microscopist and scientist of New York, to spray the ulcer with the peroxide and afterwards apply cotton saturated with the same. I used three different local applications, aristol, Howe's salve, and the peroxide; marked the cotton and sent the same to him.

He reported the best results from the peroxide and advised its continuance. Though it did not kill the spores it made them inactive, while no perceptible difference could be seen upon them from the other two. This peroxide bore the initials P. & W., our noted Philadelphia chemists. Seeing Marchand's advertisement in the SUMMARY, I concluded to try his, and sent for some. He kindly included in the order his glycozone to use in conjunction with the peroxide. A marked change was the result. The sore looked better, cleaner, healthier, and upon examination of the cotton, Dr. C. wrote me to continue the use of Marchand's. Here was a decided test and in favor of Ch. Marchand's. The ulcer has steadily progressed for the better. * * * *

A. LIVEZEY, M.D.

YARDLEY, PA.

HYDROGEN DIOXIDE; A RÉSUMÉ.

BY JOHN AULDE, M.D., OF PHILADELPHIA.

Member of the American Medical Association, of the Medical Society of the State of Pennsylvania, of the Philadelphia County Medical Society, etc.

(Published by the *New York Medical Journal*, December 27, 1890.)

Within the past ten years the use of hydrogen dioxide (peroxide of hydrogen) has become quite general among practitioners whose business has led them to give special attention to some particular class of disorders. Many general practitioners, however, have not availed themselves of the benefit afforded by this comparatively recent addition to our therapeutic resources, owing to the expense and the care required in looking after details, together with the uncertainty which attended its employment. These difficulties no longer exist; but, when we consider the advantages to be gained from its

use, the process of evolution has been remarkably slow, notwithstanding the sporadic attempts which have been made to attract the attention of the medical profession. Novel methods of treatment are too frequently shunned without investigation by regular physicians, while, on the contrary, these innovations are readily adapted to the wants of the quack.

In the present instance, although the *furore* for antiseptics continues unabated, the true position of oxygen has been ignored by those who should have given it their first attention. Long-continued and persistent effort has erected an imposing superstructure upon a theoretical foundation, losing sight of the marvelous influences constantly at work in nature. The corner-stone of this ornate edifice originally adopted was carbolic acid ; the pilasters which gave strength and beauty to its walls were composed of carbolated gauze, while cornice and roof were made of protective which had been submitted to a carbolizing process. This highly flavored substance has given place to a number of others, some of which are safer, but no more useful ; others are more efficient than carbolic acid, but, as usually employed, are far more dangerous. As the foundation for asepsis rests upon absolute cleanliness, so the foundation for antisepsis must rest upon an equally safe basis as regards the patient. The only agent known at the present time which fully meets our requirements is oxygen in some of its forms. While the spores of anthrax bacilli resist our most poisonous products—such as solutions of hydrochloric acid (two per cent.), boric and salicylic acids in concentrated solutions—oxygenated water alone, in sufficient quantity, was shown by Paul Bert and Regnard to possess the power of destroying the bacteria.

The wonderful properties of ozone are but partly understood ; like some other powerful agents, it cannot be safely handled, but it gives great promise of usefulness in the future. The statement has been made that ozone is but an allotropic form of oxygen, and that it is identical with hydrogen dioxide (the subject of the present article), and for all practical purposes, from a therapeutic standpoint, they may be considered substantially the same. Having, then, at our command a remedy possessing such remarkable properties as a bactericide, one which is perfectly harmless when brought into contact with healthy tissues, it will be worth while to study the indications for its use in the treatment of disease. In the first place, however, I should say a word with reference to the causes which have contributed to prevent its universal employment by physicians—causes already referred to incidentally. * * *

3. *The uncertainty* following the employment of the peroxide has arisen from various causes, and, as this is a subject of paramount importance, the items will be considered in detail. In the pure state hydrogen peroxide is exceedingly unstable, and, in order to render it less susceptible to the action of heat, which causes it to part with nascent oxygen rapidly, minute quantities of hydrochloric and phosphoric acids are added to the usual fifteen-volume solution ; but this, instead of retarding, rather heightens the effect of the remedy when applied to unhealthy structures, especially mucous surfaces. When the container is allowed to remain in a warm room, or when it is not properly stoppered, the activity of the preparation is materially lessened, if not entirely lost. An excess of acid is objectionable, however, as it renders the peroxide irritating instead of soothing.

Commercial peroxide which is used extensively for bleaching purposes and in the arts, is doubtless responsible for unsatisfactory results, but, as compared with the medicinal preparation, it is a very inferior product, sold at a cost of about eight cents a pound. Physicians should know that this product always contains a large proportion of acids (two to five per cent.), hydrofluoric, sulphuric, hydrochloric, oxalic, and nitric acids, and, knowing this to be the case, they should be careful to examine the reactions and see that the medicinal preparation obtained by patients is supplied in original packages. The commercial product is not "just as good" nor will it "do as well" for the patient ; and if these suggestions are kept in view, the success of the peroxide is assured.

Another important thing which I have learned is, that the mixture of the peroxide with glycerin does not make "glycozone," but, instead, a mixture which generates

slowly but constantly secondary products, which appear to possess irritating properties almost as toxic as those of formic acid, well known in Central Africa as a deadly arrow poison. I am of the opinion also that when the peroxide is used in the form of an inhalation by heating with water, a considerable proportion of the nascent oxygen is transformed into ordinary oxygen before reaching the affected tissues, and while I can readily understand how this must detract from its efficiency, remarkably prompt results have attended its administration in this manner. The only obstacle in the way of securing immediate and favorable results from the exhibition of this agent is our inability to command at all times a freshly prepared and thoroughly reliable product, free from the impurities incident to its manufacture; but that difficulty, I believe, is no longer an excuse, as it can be supplied by the principal druggists throughout the country. * * *

Therapeutics—From the peroxide of hydrogen we may obtain, in the form of a vapor or spray, the therapeutic effects of nascent oxygen, and as a surgical application or antibacterial substance this product is far superior to the gas itself. Used in the form of a vapor by inhalation, it increases the secondary assimilation by favoring the elimination of excrementitious products through the stimulating effect upon internal respiration. Just as pure mountain air arouses the activity of functions which have been depressed and promotes health, so oxygen evolved in this manner increases tissue change and prevents the suboxidation which attends upon the arrest of cell function. Oxygen is a tissue builder as well as an oxidizer of carbonaceous and excrementitious products. When it is introduced into the alimentary tract, abdominal fermentations are arrested by the destruction of the germs which produce them; unhealthy mucous secretions are destroyed, while the vitality of the cells lining the walls of the intestine is augmented, and their power against the absorption of ptomaines and leucomaines greatly increased. The surgeon will find the peroxide an efficient and most convenient antiseptic, as it can be freely used in cavities, in discharging sinuses, and upon the most delicate tissues, without danger of producing the slightest irritation. In all cases of threatened collapse, in low conditions of the system, and during convalescence from severe illness, the physician should bear in mind the wonderful revitalizing properties of this remedy. Perhaps the reader will gain a more practical idea of the applications by a reference to some of the more prominent indications, and I shall briefly pass in review some of the diseases in which it may be used with beneficial results. * * *

Since it has been determined that in *yellow fever* and *cholera* the poison germ is found only in the intestine, the peroxide promises to afford exceptional relief in these diseases. When it is introduced into the rectum, the heat of the body will cause oxygen gas to be evolved, while the local action of the drug will destroy all unhealthy products which may be present in the lower bowel. The nascent oxygen will be taken up by the absorbent structures and enter the general circulation; but if we accept the doctrine of phagocytosis, it will do even more than this, by reason of its stimulating action upon the modified white corpuscles, which are now regarded as the special enemies of bacteria escaping through the walls of the intestines. And for the same reason it may be used with advantage as a lavement in the treatment of *diarrhœa*, dysentery, and in typhoid fever. In the latter disease I have used the pure oxygen gas with very great satisfaction, and have found a solution of the peroxide superior as a mouth wash during the progress of this most tedious disorder.

The peroxide should be used in all forms of *indigestion*, and more especially when the stomach is weak and depressed to such an extent that the usual antiseptics are not well tolerated. Those who use it once for the relief of indigestion, gastritis, gastralgia, and for the arrest of fermentation, or an abnormal flow of mucous, will have no cause to regret the selection. A large number of *cutaneous affections* are dependent upon an unhealthy condition of the alimentary tract, such as urticaria, eczema, etc., and, of course, are benefited by the use of the peroxide.

Pulmonary affections have long claimed the attention of those who dabbled with oxygen inhalations, and it is in this class of cases where faithful attention to details will produce most marked effects, although I can not be convinced that any medicament in itself can arrest the progress of the disease. The continued use of the peroxide internally improves the primary assimilation; the regular and systematic inhalation of the vapor will not only improve the secondary assimilation, but will also destroy any morbid products with which it comes into contact in the pulmonary tissues, and, judging from my own experience with this agent, I have no hesitancy in saying that its value is not yet appreciated by a large number of physicians who, with it, might be the means of prolonging human life. My observations with the vapor and spray in *asthmatic conditions* have been surprising, and I have found them of signal service in meeting emergencies, such as asphyxia from coal gas, sudden collapse from hemorrhage, typhoid and other fevers. The long continued use of the vapor has a marked effect in restoring the resiliency of the air-vesicles in *emphysema* when it occurs along with asthma in young persons. A gentleman now under treatment has suffered from asthma since he was six weeks old, and is now twenty-five, but under this treatment he has gained weight, is able to sleep regularly every night, and has increased sixteen pounds in weight during the past three weeks, while the chest measurement has appreciably decreased. This method of treatment is valuable in *phthisis* at all stages, but it should be used as an adjuvant to other treatment and attention given to diet. In this connection should be mentioned the usefulness of the vapor in the treatment of *bronchitis*, subacute and chronic, and at the same time the value in aborting attacks of acute catarrh.

Inhalations of the vapor will prove useful as an adjuvant in neuralgia, anæmic headaches, general debility, malarial toxæmia, and corpulence, combined with diet adapted to the various disorders mentioned.

In *surgical practice*, when the solution of the proper strength is brought into contact with diseased tissues, a brisk effervescence takes place and continues until all the pus-corpuscles present are destroyed. This solution may be used topically in nearly all cases of catarrh of the upper air passages in the form of a spray, and it may be used as an antiseptic after the removal of pus in *empyema*. The substance possesses the advantage over other antiseptics of being harmless, and can therefore be used freely in *diphtheria* and *croup*. There are so many indications for its employment that it would be difficult to mention all the *topical uses*, although the following may be referred to, viz., boils, carbuncles, indolent ulcers, carcinoma, and venereal diseases as an injection.

The gynæcologist will find numerous applications for this agent. It may be used in the form of a douche in leucorrhœa, elytritis, and vaginismus, and a cotton-wool tampon may be saturated with it and placed in a gelatine capsule (veterinary size) and introduced into the vagina in the case of ulceration, vesico-vaginal fistula, and endometritis. The ophthalmologist and aurist will likewise find that it furnishes them the most complete and safe antiseptic that can be had, and gradually its employment will extend to every department of medicine and surgery.

The most flattering commendations of "Marchand's Peroxide of Hydrogen (medicinal)" have been given voluntarily by numerous well-known authors and contributors to medical literature within the past few years, some of whom may be mentioned as additional evidence that the methods here recommended are worthy of further investigation: Dr. W. B. Clarke, of Indianapolis, Ind.; Dr. George B. Hope, Surgeon to the Metropolitan Throat Hospital, New York; Dr. J. Mount Bleyer, of New York; Dr. Robert T. Morris, of New York; Dr. Paul Gibier, Director of the New York Pasteur Institute; Dr. R. Charest, of St. Cloud, Minn.; Dr. E. R. Squibb, of Brooklyn, N. Y.; and others whose names cannot now be recalled. Dr. Morris refers to it as "the necessary peroxide of hydrogen," and I have found Marchand's product to possess in a remarkable degree the properties so essential to success—viz., uniformity in strength, purity, and stability.

PEROXIDE OF HYDROGEN IN GYNECOLOGY AND IN OBSTETRICS.

By EGBERT H. GRANDIN, M.D.,

Obstetric Surgeon New York Maternity Hospital, Visiting Obstetrician New York Infant Asylum, etc.

(Published by *The Times and Register*, of Philadelphia, January 31, 1891.)

Modern methods of antisepsis enable us in the vast proportion of cases to prevent suppuration. The problem remaining is how arrest it when present, or abort it when imminent.

The virtues of peroxide of hydrogen ($H_2 O_2$) in general surgical practice have recently been heralded by Dr. Robert T. Morris, of this city, in the columns of *The Times and Register*.* The object of the writer is to exemplify his personal experience with this agent, through the brief record of a few cases in which he has tested it.

Case I. *Sub-mammary abscess.*—About one year ago I was consulted by a Mrs. G. She was nursing a two and a half months' puny infant, notwithstanding the fact that the right mamma was fairly riddled with sinuses, and the left presented to my touch faint fluctuation. Her previous medical attendant had exhausted all routine measures, and yet, as she expressed it, "she was going from bad to worse." She had hectic fever and other symptoms of sepsis; her appearance suggested the absolute necessity of rapid action.

I at once weaned the child, of course; made a deep incision in the left mamma, giving exit to a mass of fetid pus, washed out the cavity with bichloride (1-1,000), and packed it with gauze. I thoroughly wetted the sinuses in the right mamma, irrigated and packed them similarly. In a few days I had control of the sepsis, but the pyogenic membrane and its product resisted all my efforts. In despair, and without much hope of success, I washed out the cavities with peroxide of hydrogen (half diluted with glycerine), and applied a compression gauze bandage. At the end of ten days the abscesses were cured.

Case II. *Suppurating pelvic hematocele.*—This case was seen in consultation. The patient was a young prostitute, and the only etiological cause I could determine was copulation during menstruation. The tumor bulged in the retro-uterine pouch, and I treated it as follows: Under antiseptic irrigation I aspirated along the finger as a guide, and obtained a mixture of blood and pus. Using the aspirator muzzle as a director, I enlarged the opening transversely, sufficiently to admit a Palmer dilator. Inserting this I divulsed, curetted the cavity—which measured fully three inches square—and washed it out with equal parts compound tincture of iodine and water. I next inserted a flange-rubber drain tube. The cavity was washed out daily through this tube with two and one-half per cent. carbolic, but contrary to my experience with similar cases, it had not contracted much at the end of a week, and was still secreting pus. I then inserted a small Chamberlain glass uterine tube, and distended the cavity with undiluted peroxide of hydrogen. This checked suppuration at once, and when the patient was seen three weeks thereafter, an induration in the posterior vaginal cul-de-sac was the only remnant of the hematocele.

Case III. *Puerperal septic endometritis.*—Seen in consultation. Fifth day post-partum. Patient had fœtid lochia, tenderness over uterus, rise of temperature, rapid pulse. A number of intra-uterine bichloride douches had been administered before I saw the case. Having differentiated extra-uterine source of the general sepsis, I curetted the cavity of the uterus, according to the method I have repeatedly described and advocated, removing a mass of degenerated decidual matter, and then,

* See p. 55, reprint of article headed "The Necessary Peroxide of Hydrogen," by Dr. Robert T. Morris.

instead of applying pure phenic acid to the cavity, and irrigating it with iodine and water, I washed it out through a Chamberlain glass tube with a pint of peroxide of hydrogen (undiluted). The local sepsis was thus at once checked; the patient made a rapid convalescence under the means which suggest themselves for meeting the sepsis already in the system.

These cases typify instances in which the peroxide of hydrogen will be found useful by the gynecologist and obstetrician. As opportunity offers I propose to resort to this agent in vaginitis, urethritis, and purulent cystitis. Further, and in this direction I am as yet only experimenting, I am hopeful that in this agent we will find we possess a means which will enable us to avoid laparotomy in certain instances of pyosalpinx. My conclusions on this point, however, it would be premature to state.

My experience thus far with the peroxide of hydrogen justifies the statement that it is absolutely harmless, and that it is at the same time the most efficient of all the agents at present at our disposal for preventing the ravages which uncontrolled suppuration is capable of causing.

SINUS TREATED WITH PEROXIDE OF HYDROGEN.

(Extract from *Practice*, Richmond, Va., February, 1891.)

Dr. William F. Waugh tells in the *Times-Register* of an old woman who stepped on a nail, which penetrated the foot almost to the superior surface. A sinus formed, and had been discharging for two months when the patient was first seen. Marchand's peroxide of hydrogen was injected into the sinus by means of a hypodermic syringe. The first effect was to destroy the leather of the piston. The sinus was found to be of a horse-shoe shape, the probe passing almost through the foot, between the metatarsal bones, and when the peroxide was injected a hard lump could be felt one inch from the opening on the sole of the foot. This was laid open, and a stream of peroxide was sent through. Result: Cured in a week.

DIPHTHERIA AND THE USE OF HYDROGEN DIOXIDE IN ITS TREATMENT.

Read before the Chemical Society of Maryland, February 6, 1891.

By Dr. EDW. J. BERNSTEIN, of Baltimore.

(Extract from *Maryland Medical Journal*, February 21, 1891.)

In this very elaborate paper, Dr. E. J. Bernstein says: (p. 361). . . In my first case of diphtheria I began the use of Sulphide of Calcium, but finding that not only was it disagreeable to both taste and smell, and that it also soiled the bed linen and clothing of the patient, but that the disease continued to get worse, that the membrane which at first was limited to large necrotic patches on the tonsils, now covered the entire anterior pillars of the fauces and the uvula, which was now considerably swollen.

I discarded the nostrum and began the use of Hydrogen Dioxide, which I directed to be sprayed into the throat every hour of the day and night, gradually relaxing the number of night sprayings as the case went on to improvement. I also directed that the nose should be sprayed at least twice a day with the same solution. Within a few hours the mother said she noticed a change for the better in her child, and when I made my evening call it was quite perceptible. I also noticed, which fact I have since seen corroborated by others who had used the drug, the better color of the child. The lips, which before its administration were quite blue, were now of a healthy red color. The membrane in the throat had made no increase. By the following morning

there was a decided decrease in the pseudo-membrane, and from now on began to disappear.

In conjunction with the above local treatment, I gave large doses of tinc. ferri chlo. in combination with tonic dose of quinia every three hours.

Cream of tartar lemonade was given ad libitum to appease thirst and to relieve congestion. The air of the room was regularly charged with steam, generated on a small alcohol stove, to which had been added an alcoholic solution of menthol, eucalyptol and thymol. It is well to say that the strength of the hydrogen dioxide was 50 per cent. of Ch. Marchand's 15-volume solution.

In three other cases which came under my observation, I followed out the same line of treatment, and each recovered without any untoward after effects. In the hope that some of you here this evening may be induced to try this plan of treatment, I submit this paper.

HYDROGEN PEROXIDE IN DIPHTHERIA.

By G. F. ADAMS, M.D., of Pulaski, N. Y.

(Published in the *Medical Era* of Chicago, Ill., March, 1891.)

The article in the December "Era" copied from the "Medical Times," by Dr. George W. Major, in regard to the use of Peroxide of Hydrogen in diphtheria, I can heartily indorse. I have just discharged three cases of diphtheria that I treated with Ch. Marchand's Peroxide of Hydrogen. I sprayed the throat with an atomizer filled with full strength 15-volume solution of peroxide in the early stages. The membrane was removed almost at once, and after the first application and one complete clearing of the throat, I then reduced the 15-volume solution by adding three parts water to one of peroxide, and by spraying the throat thoroughly as often as once an hour, all membrane was destroyed, the breath was kept sweet, and the throat in a fairly comfortable condition. When used at first in full strength the patient may complain of a slight smarting, but no irritation results.

The atomizer should consist of nothing but glass and rubber, as the peroxide has a strong affinity for all metals, except gold, silver, and the rare metals.

I can assure all who try Peroxide of Hydrogen as a local application in diphtheria that they will be thoroughly well pleased with it.

SCARLATINAL DIPHTHERIA.

By WM. F. WAUGH, M.D.

(Extract from *The Times and Register*, Philadelphia, March 7, 1891.)

I desire to place upon record a case that is unique in my own experience; though my readers may, perhaps, have had better results. The case was that of a child under four years of age. He had been attended by a dispensary physician during the first part of the illness; and this gentleman, when he gave up the case, had given a gloomy prognosis, with which I heartily coincided. On my first visit I found the child's throat covered with blackish sloughs, the lips and tongue covered with fissures and ulcers, the nose discharging freely the irritating and offensive secretion of nasal diphtheria, the eyes showing spots of pus at the inner canthus. The child complained of earache and of pain in the forehead, so that the disease had passed up the Eustachian tubes and into the frontal sinuses. Reddish spots and blotches appeared on the face and body. The stench was dreadful, the urine almost totally suppressed, but the few drops that were passed could not be saved for examination. The child had been delirious for

some time, not being able to recognize his parents. The one good point was that his stomach retained milk fairly well.

It has not been my good fortune to witness the recovery of many such cases. In fact, the more extended is my experience with diphtheria, the more I dread it; especially when it has become firmly established in the Schneiderian mucous membrane, and in the passages leading from the naso-pharynx.

I felt it my duty to inform the parents that death was the only result to be expected; and that they could be very thankful if their other children, six in number, should escape.

However, I gave them a bottle of Marchand's Peroxide of Hydrogen, and directed them to syringe the nostrils and wash the mouth out with the solution diluted to one-fourth its strength. *This was repeated every hour, day and night.* No other treatment was employed, and whiskey was given with the milk, as the only food. The child began at once to improve; the right tympanic membrane gave way, and then the solution was thrown into the ear, and bubbled out at the nose. The urine began to be secreted more freely, and the child was pronounced out of danger in one week from my first visit.

One of the other children was seized with sore throat, enlarged tonsils and torticollis; another had a mild attack of scarlatina, but the others escaped without contracting the disease. This in itself is notable, as the children were all kept at home, in a crowded little house, with miserable sanitation.

THE PEROXIDE OF HYDROGEN—ITS USES IN ABDOMINAL SURGERY.

By CHARLES P. NOBLE, M.D.,

Surgeon-in-Charge of the Kensington Hospital for Women, Philadelphia.

(Published by *Philadelphia Medical News*, April 11th, 1891.)

The importance of the Peroxide of Hydrogen as a germicide, and more especially as a pus-destroying agent, is becoming firmly established by rapidly accumulating clinical evidence. A very considerable experience with the drug has made me enthusiastic concerning its remarkable qualities; and I find myself extending its application almost daily. In general, in order that antiseptic or germicidal agents may be used effectively, it is absolutely essential that all foreign material, discharges, etc., be first removed, so that the agent may be brought in direct contact with the surface or tissue to be acted upon. It is also true that the power of penetration of the antiseptics in common use is slight, so that they are reliable only in combating strictly superficial septic processes. This is particularly true of corrosive sublimate solution, which, by its action on albuminous discharges, forms an impenetrable covering which prevents the solution from coming in contact with the tissues to be acted upon. In this respect the action of the peroxide solution is essentially different. It attacks, disintegrates and oxidizes all discharges and dead tissue with which it comes in contact, thus favoring its contact with and action upon underlying tissues. Moreover, the products of its activity escape as water and carbonic acid gas. At this time I do not propose to discuss the relative value of the peroxide of hydrogen as a germicide. I believe that our knowledge upon that subject will be far more exact after a little time than it is at present. The fact, however, that this agent has the power to oxidize dead organic matter suggests to my mind a wide field of usefulness for it in preventing sapræmia or ptomaine poisoning, in the treatment of suppurating tracks and cavities in which dependent drainage cannot be had, and in which free irrigation with water is impracticable.

In my work in abdominal surgery I have found Peroxide of Hydrogen of positive value.

In cleaning the hands preparatory to operation I have found it very useful, especially when the skin about the finger-nails has become somewhat horny or roughened from too much use, or from frequent washings, or from prolonged contact with antiseptic solutions. Its power to loosen and to remove dead epithelial cells, and to soften the skin about the nails, is quite remarkable. Moreover, all foreign material about the nails is either oxidized and removed or is made more accessible to the sublimate solution which is used later. In practice I have used the peroxide after scrubbing my hands through three waters with soap and the nail-brush, then soaking them in turn in saturated solutions of permanganate of potassium and of oxalic acid, and before soaking them in corrosive sublimate solution.

Bacteriological examinations have shown that even this method (omitting the peroxide solution) does not make asepsis certain, as germs have been removed from the subunguial spaces after it has been faithfully carried out. I have not been able to test the value of the addition of the peroxide of hydrogen solution in securing asepsis by bacteriological experiments, but practically I feel convinced that it is of service in securing that end. The settlement of the question authoritatively will be of great interest to all those who believe in satisfying an antiseptic conscience.

In the management of the drainage-tube after abdominal section, under special conditions, the peroxide solution has been of signal service. In typical cases, in which the drainage tube is removed after from one to three days, there is no indication for its use. But when from any cause the drainage-tube must remain in longer, it is useful in keeping the tube and drainage track sweet and free from pus. On a number of occasions after a tube had been in place from a week to ten days, and the discharge had become slightly purulent, I have been able to combat successfully the tendency to suppuration, to shorten the tube gradually, finally to substitute a gauze plug for the glass tube, and to secure rapid healing of the drainage track; when otherwise a sinus would have resulted. One such case was one of a ruptured large ovarian tumor, having contents of a jelly-like consistency, which had become distributed throughout the peritoneal cavity. Jelly-like material was discharged through the tube for two weeks, and yet by the use of the peroxide solution rapid healing was obtained. Another case was one of post-operative intra-peritoneal hemorrhage. Tarry blood was discharged through the tube for ten days, yet the same care secured the same result. Another striking case was one of fæcal fistula which formed after the removal of a dermoid ovarian cyst—presumably caused by the growth of a small bunch of hair from the cyst into the bowel. The track was kept clean and the peroxide was used freely. The fæcal fistula closed in three weeks, and the remaining sinus closed within two months from the date of operation, being kept open for a time by an infected omental ligature, and closing promptly after its discharge.

The peroxide solution has been applied to the drainage track and to the inside of the tube by saturating absorbent cotton, held in a slender long-handled forceps, and passing this down the tube. The peroxide solution has been used pure or diluted (one to two or three.)

I have not used the peroxide solution within the peritoneal cavity during operation, but believe it will prove useful in disinfecting infected pedicles. In removing pus sacs rupture frequently occurs, deluging the broad ligaments with pus. Under these circumstances the ligature applied to secure the pedicle necessarily becomes infected. Heretofore I have washed away septic material with boiled water, and later applied bichloride solution on a sponge to the region of the ligature. In such cases it seems probable that the peroxide solution will be of real value.

In cleaning the abdominal wound preparatory to removing the sutures, the peroxide solution has proven very efficient; especially if a dry dressing—boric acid or iodoform—has been used. Finally, if any pus has formed in the track of the drainage-tube or of any of the sutures, the peroxide solution will remove it more efficiently than any other agent.

A RÉSUMÉ OF THE HISTORY AND PRACTICAL APPLICATION OF HYDROGEN PEROXIDE IN SURGICAL AFFECTIONS.

By S. POTTS EAGLETON, M.D.

Resident Physician in the Children's Hospital, Philadelphia.

(*Medical and Surgical Reporter* of Philadelphia, May 16, 1891.)

Hydrogen peroxide was discovered by M. Thenard, a French chemist, in the year 1818, since which time it has, like many other therapeutical remedies, lain dormant, occasionally being brought forward by some "enthusiast" and its virtues highly extolled for a time. But the drug, unequal to the task of proving all that had been said in its favor, was again and again returned to its stall of oblivion. Within the past few years, it has been brought before the medical profession, on account of its antiseptic properties, and apparently has awakened into active therapeutic life.

In looking over the literature on the subject, I find that Dr. B. W. Richardson,[1] in 1852, called attention to the action of hydrogen peroxide in an article upon the subject, which excited wide-spread interest in the profession at that time and has led to many experiments with the drug, both in surgery and medicine.

It is my purpose to confine myself in this study entirely to the treatment of surgical affections. Before referring to the results of my own experience, during the past few months, I will briefly allude to some of the most important monographs which have appeared from time to time in our medical journals. C. T. Kingzett[2] believes that the substance exhibits striking antiseptic effects and is capable, even in very small quantities, of arresting the so-called process of fermentation which is originated by living organisms. He further calls attention to the fact that care should be exercised in making the solution neutral before using, and yet admits that neutral solutions are by no means as stable as are those of a slightly acid reaction. In closing his monograph he states that the expectations of several noted surgeons of France in the treatment of wounds with this compound have been amply realized; among those may be mentioned M. Baldy, M. Regnard and M. Beau. In summing up his article he further says that, in his opinion, hydrogen peroxide is far superior to phenol, and that it has been demonstrated beyond question that all wounds treated with peroxide of hydrogen have progressed well, healing generally by first intention.

A. E. Prince[3] speaks most favorably of the results obtained with this remedy.

C. E. Shelley[4] considers it to possess anæsthetic properties, and at the same time claiming for the drug, not only a pus-destroyer, but that it is an actual stimulant to the surface of wounds. To the carefully conducted experiments of Dr. P. Miquel, quoted by W. D. Bizett,[5] we owe the establishment, on a firm basis, of hydrogen peroxide as a positive germicide. The line of experimentation pursued had the following aim: to determine the quantity of various substances, commonly used as germicides, which, added to a quart of beef tea, would prevent decomposition. Miquel found among a

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[1] B. W. Richardson, Tr. M. Loc. Lond., 1862, vol. II, pp. 51–53.
[2] *Ibid.*
[3] A. E. Prince, St. Louis, *M. and S. Journal*, 1884, vol. XLVI, pp. 246–252.
[4] C. E. Shelley, *Practitioner*, Lond., 1884, vol. XXXII, p. 196.
[5] W. D. Bizett, *Atlanta M. and S. Journal*, 1888–9, N. S.

long list of substances used by him, that only two were more powerful than hydrogen peroxide. The following table shows the relative strength, according to his experiments, of the four most powerful germicides:

Biniodide Mercury	0,025 grains.
Biniodide Silver	0.03 grains.
Hydrogen Peroxide	0.05 grains.
Bichloride Mercury	0.07 grains.

The results thus obtained place hydrogen peroxide ahead of bichloride mercury as a germicide, with the advantage, also, of being absolutely void of any toxic action, while the corrosive sublimate is a most virulent poison. Bizett[1] claims that when the pure peroxide, which is syrupy in consistence, is brought into contact with living tissues, it acts as a direct caustic. Various experiments were made by H. Gifford[2] directly with the *disease germs*, thus testing the germicidal action of the peroxide. Two methods of determining its ability to destroy germs, were used, that of Koch, and his own well-known method. The preparation of peroxide used, was that of Chas. Marchand's (15 vol.). Gifford found that the white and yellow cocci, as well as the bacilli anthrax, were killed in exposures of from ¾ to 1¼ minutes. It required but ¾ of a minute to destroy fully developed anthrax spores. He further found that the solution exposed for 40 days, to a temperature of 68–75° killed the yellow pus cocci in from 10–11 minutes. The same solution of peroxide, when diluted with *four* times its bulk, requires an exposure of 30 minutes to kill the pus cocci. If diluted with an equal volume, it kills within ¾ minute. After an experience of six months, I. N. Love[3] sums up the action of hydrogen peroxide as follows: It is a most efficient means of cleansing purulent surfaces, deep cavities and sinuses, stimulating the healthy process in ulcerating parts. As a destroyer of microbes, a cleanser and securer of comfort, it is of great value as a local application.

My own experience with this drug in surgical affections, during the past ten months, has been most satisfactory. During that time I have used the remedy in the following affections: Abscesses (acute and chronic, of various kinds), suppurating glands, sloughing gangrenous wounds, empyema of the chest, necrosis (general and localized), suppurative otitis media, and wounds of all descriptions. The ages of the cases treated, varied from two to thirteen years. The mode of applying the peroxide was as follows: All cavities, crevices, etc., were syringed with the bichloride of mercury (1–2000, to 1–6000) and then carefully cleansed with the hydrogen peroxide (Marchand's).

At first one volume of this solution was diluted with two to three times its bulk. Later on, I used the full strength. The first effect noticed after applying the peroxide, was the rapid oxidation of all purulent or bloody material, which would cause the distention of crevices, no matter how minute, with the oxygen, which was eliminated as a frothy (often yellowish, depending upon the quantity of pus present) bubbling substance. After the oxidation was completed, the wound was always left in a clean, sweet condition, absolutely free from pus. The wounds were then gently dusted over with iodoform and the usual antiseptic dressings of gauze, etc., were applied. On removal of the dressings, a few days later, it was noticed that the wounds were in almost every instance cleaner (especially marked in acute cases), more healthy in appearance and with a decided diminution in the quantity of pus secreted. The thought being suggested, that possibly the bichloride and not the peroxide was instrumental in producing the favorable results noticed, I commenced a series of control experiments. I would, at one dressing, use simply the bichloride of mercury, following this, at the next dressing, with the peroxide. Thus making actual comparisons in the same cases. After several alternate dressings as above, I found *without exception* that the hydrogen peroxide perceptibly diminished pus formation to a much greater degree than simply the bichloride alone.

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[1] W. D. Bizett, *Atlanta M. and S. Journal*, 1888-9, N. S.
[2] H. Gifford, *Med. Rec.*, N. Y. 1888, vol. XXXIV, p. 243.
[3] I. N. Love, *Phila. Med. Times*, 1887–1888, vol. XVIII, pp. 362–364.

The belief that iodoform should not be used in conjunction with the peroxide, for fear of liberating free iodine, which, as a direct irritant, would defeat the object in view, is, I believe, erroneous. I found that when a quantity of iodoform was placed in a small receptacle covered with the peroxide solution and then set aside for periods varying from three hours to three days, on being treated chemically for free iodine, with the ordinary starch test, gave negative results. Although one drop of a solution of iodine, on being added to the same solutions, gave a brilliant reaction on addition of the starch.

In all cases in which the peroxide was given a fair trial, I have observed a direct healing effect upon the granulating tissues. It is therefore evident that, owing to its oxidizing action on the pus and the diminution of the purulent secretions after its use, it does, either directly or indirectly, cause a destruction of the anthrax bacillus. In concluding my article. I think, from the chemical as well as the experimental evidence which has been deduced, we can safely sum up the action of peroxide of hydrogen in the treatment of surgical affections, as follows :

1. Hydrogen peroxide is a positive germicide and a possible stimulant to granulating tissues.

2. Owing to its especial property of eliminating oxygen. it is of unparalleled value in the distention of suppurating sinuses and cavities, especially in the mastoid region, or where it is almost impossible to reach unhealthy surfaces by other means.

3. The diluted solution is perfectly harmless and can with safety be used in any quantity.

4. The strong concentrated solution, syrupy in consistence, is a direct irritant to all tissues and should never be used.

5. It possesses healing and cleansing qualities as well as those germicidal in nature.

6. When exposed to light it loses strength ; care should therefore be exercised in keeping the bottles well stoppered with rubber corks, and in a cool, dry place.

7. Fibrin, cellular tissue and some metals, instantly decompose it. In contact with sugar and starch it eliminates carbon dioxide (CO_2).

8. In washing suppurating surfaces, it should be used until oxidation ceases, thus showing a complete destruction of all existing purulent material.[1]

EXTRACT FROM PAPER ON "ADJUVANTS OR AIDS TO GYNÆCOLOGY—NEITHER MEDICAL NOR SURGICAL."

By C. A. PHILLIPS, M.D., of Boston, Mass.

Read before the International Congress of Homœopathy, held at Atlantic City, June 19, 1891.

. . . Another local application of great service in the treatment of gonorrhœal or syphilitic and all ulcerative conditions of the genital organs is Marchand's Peroxide of Hydrogen. While its power to destroy germs and septic matter with which it comes in contact is unsurpassed by any other germicide or antiseptic, it is perfectly harmless to living tissues. With a swab of cotton saturated with this solution the parts can be more thoroughly cleansed than by any other means with which I am acquainted,—thus removing effete poisonous or septic matter, and I cannot understand wherein this is any more objectionable than cleansing the skin with soap and water, or the teeth with a brush.

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[1] Read before the D. Hayes Agnew Surgical Society of the undergraduates of the Medical Department of the University of Pa., February, 1891.

MEDICINAL PEROXIDE OF HYDROGEN AND GLYCOZONE.

By Dr. J. H. De WOLF, of Baltimore, Md.

(*The Southern Medical and Surgical World*, of Baltimore, Md., August, 1891.)

The topical application of Oxygen is capable of immense benefit. In the pitting of Small-pox I most earnestly advocate and urge its use, either in the form of Glycozone or properly diluted Marchand's Peroxide of Hydrogen (Medicinal). I believe much deformity can be obviated by its use, and the force of the disease lessened. Foul and indolent ulcers, when treated by iodoform, carbolic acid, etc., are apt to poison the patients; such cases have occurred. With oxygen that would be impossible. In large suppurating sores, where the various germicides are dangerous on account of the large breach of continuity and absorbtion of the poison, the topical application of oxygen is perfectly safe, and to say the least, equally efficacious.

Opthalmia is advantageously treated by the topical application of either the Peroxide or Glycozone. Styes can be aborted if Glycozone be rubbed on the lids at the commencement; and as styes are painful, and swelling and pain last for a few days, the use of Glycozone is satisfactory to both patient and physician. In nasal catarrh, when the mucous membrane is dry and crusts form, prompt and more satisfactory results can be obtained from Glycozone than from any other means known.

In the various chronic inflammations of the throat which are ordinarily obstinate to treatment, I have frequently satisfactorily treated by the Peroxide (diluted,) especially when the orifice of the eustachian tube was closed by swelling, and the patient rendered uncomfortable by temporary deafness and ringing in the ears.

PEROXIDE OF HYDROGEN, MATERIA MEDICA AND THERAPEUTICS.

Vol. II., Page 681, 1891. By JOHN V. SHOEMAKER, A.M., M.D.

Professor of Materia Medica, in the Medico Chirurgical College, of Philadelphia, Pa.

Pharmacology.—The usual strength of peroxide of hydrogen is called the fifteen-volume solution, because each portion of the solution yields fifteen volumes of the oxygen. It is prepared by Charles Marchand, New York, for medical use, and is an active oxidizing and antiseptic agent. Glycozone is the trade name of a similar preparation in which glycerine is the vehicle.

Therapy.—Though less powerful than many other antiseptics, the solution of hydrogen peroxide has a special place in surgery, gynecology, and obstetrics, on account of its power of decomposing pus and destroying the microbes of suppuration. Being free from all irritating qualities, it can be poured over wounds, injected into sinuses, or into the ear, or used as a spray in ulcerations of the pharynx and of the larynx.

It produces a frothing up when it encounters pus, owing to the liberation of oxygen, and the cessation of this commotion indicates the removal of all pus. The surface of the wound or ulcer becomes blanched, but it is not injured by the application.

Tubercular and mammary abscesses especially are well treated in this way. In ulcerative tonsilitis, fetid breath, and in some bronchial affections, a spray of dilute hydrogen peroxide is productive of benefit. A spray of this agent is likewise of utility in chronic nasal catarrh, ozœna, and scarlatinal angina. It has been administered, well diluted, in gastric affections, and is said to be very useful in flatulent dyspepsia, heartburn, catarrh of the stomach and bowels, etc.

In diphtheria and croup its value has been established; a two volume solution is specially recommended in young children as a local application, and particularly after separation of the membranes, in order to remove the odor and disinfect the surface. Internally it is too quickly decomposed in the stomach to render much service as a source of oxygen to the blood. It might prove of value in gastric ulcer.

PEROXIDE OF HYDROGEN IN DISEASES OF THE MUCOUS AND SEROUS MEMBRANES.

By W. S. MULLINS, M. D., Henderson, Ky.

[A paper read before the International Homœopathic Congress, Atlantic City, N. J. June 16–23, 1891.]

Published by the "Medical Era" of Chicago, November, 1891.

Since the discovery of Peroxide of Hydrogen in 1818 by the French chemist, Thenard, and its introduction to the medical profession by Richardson, in 1858, it has, like most remedial agencies brought forth by the empirical school of medicine, enjoyed great favor for a few years, only to fall into disuse, not because it did not possess virtues peculiar to itself, but from the fact that it was an impure chemical substance, producing escharotic effects when applied locally, and poisonous effects upon the system when diluted.

What it may do outside of its remedial effects upon mucous and serous membranes, I know not. But the results obtained in diseases of the nose, throat, ear, skin and womb, I have had an extended clinical experience of ten years. It is Marchand's Peroxide of Hydrogen, H_2O_2, that I speak.

I know of no chemico-therapeutical substance of modern use, that brings the physician a more decided and powerful curative action, in its range of indications.

Before entering into its clinical adaptation, permit me to say, by way of caution, that in no instance, and under no circumstances, should the commercial and poisonous peroxide of hydrogen be used. Neither should it be applied or inhaled except by means of glass, rubber, porcelain or gold instruments, as its effects are certainly contaminated, if not entirely destroyed, by any other appliances than the ones named.

In acute, subacute or chronic cases of catarrh of the head, when accompanied by an acrid, excoriating discharge, and much sneezing, it will almost certainly control the sneezing and change the nature of the discharge from acrid to bland.

In chronic nasal discharge, either from the anterior or posterior nares, of a yellowish greenish fetid character, with an accumulation of hardened pus and scabs in the nose, it will soften them and cleanse the nose effectually.

In both conditions of nasal catarrh as enumerated to be followed by an application of glycozone on a cotton swab; or, better still, to saturate a small cotton tampon of borated cotton with the glycozone and place it well up each nostril; allow it to remain from one to two hours, cautioning your patient to remove it gently and to desist from any forcible blowing of the nose between treatments.

In granular pharyngits, produced by smoking, apply by means of a spray as follows:

Peroxide of hydrogen, 15 volumes, ℥ ss.

Aqua distillata, ℥ ijss.

To be followed by inhalations of ozonized vapor. It is a radical cure. Three sprayings and three inhalations in bad cases, and once a day in simple cases, should be used, cautioning your patient to hawk as little as possible.

In diphtheria, an early application of copious and frequent spraying of the nose, mouth, throat, pharynx, and larynx, administered with a mixture of:

Peroxide of hydrogen, 15 volumes, ℥ ss.

Aqua distillata, ℥ iij.

When diphtheria is well developed, irrigate copiously and frequently, the nostrils, pharynx: mouth and larynx, with a stronger mixture as follows:

Peroxide of hydrogen, 15 volumes, ℥ jss.

Aqua distillata, ℥ ss.

The above is the best local application for this most dread disease. It is to be used of course with the indicated internal remedies.

In bronchitis and asthma, administer ozonized vapor inhalations three or four times a day with a mixture made as follows:

Peroxide of hydrogen, 15 volumes, ℥ jss.

Glycerine, ℥ j.

Koch's lymph or Shurley-Gibbes iodine, chloride of gold and sodium, are nowhere in benefiting your consumptive patients, when compared with the following:

Peroxide of hydrogen, 15 volumes, ℥ ij.

Pure glycerine, ℥ j.

M. Sig. Shake well, inhale for ten minutes, three times per day, in alternation with the following:

Fl. ext. Hydrastis, ℥ ss.

Glycerine, ℥ j.

Kreasotum, M. vj.

Aqua distillata, ℥ jss.

M. Sig.: As directed.

In cases of the many different varieties of eruption seen so often upon the faces of young girls from 15 to 23 years of age, including blackheads, by applying first for about three minutes, to the face a flannel cloth as hot as can be, wrung out of hot water, then apply by means of a sponge, Marchand's full strength Peroxide of Hydrogen, followed by rubbing well into the skin, boracic acid; one to three applications per day, according to the severity of the case, will give you all the reputation you desire as a dermatologist.

CONJUNCTIVITIS.—The following makes a splendid application for catarrhal or granulated conjunctivitis:

Glycerine, ℥ j.

Boracic acid, ʒ j.

Mix well in a mortar and add Peroxide of Hydrogen, ℥ j. Apply by means of a camel's hair brush. Keep well corked.

CHRONIC ULCER.—I have just dismissed, from my office, cured, an old chronic ulcer of the leg of fifteen years' duration. It was one inch deep, three inches long and two inches wide.

The only treatment the patient received was the application of peroxide of hydrogen, 15 volumes, dropped on carefully night and morning by an ordinary glass dropper, being careful not to disturb the white foam thereon, The whole was then covered by borated cotton, saturated with glycozone, oil silk over this, the leg kept bandaged from the foot to the knee by an Empire elastic bandage—by the way, far superior to Martin's.

During the three months he was under my treatment, he received three doses of sulphur, 47_m, ten doses of Arsenicum 3_x, ten doses of Argentum nit. 6_x, ten doses of Lachesis 6_x, ten doses Calcarea sulph. 6_x, which, in my mind, contributed much in curing the case.

GYNECOLOGY.—In the field of gynecological work, nothing serves me as well and often, nor is there anything, in my opinion, to take its place.

ABSCESS OF THE LABIA.—Puncture with bistoury, cleanse with pure Peroxide of Hydrogen, 15 volumes, then by hypodermic syringe inject slowly into the sac, 10 or 15 drops of Glycozone; very little reaction follows, and the results are perfect.

VAGINITIS.—As a vaginal douche, use hot buttermilk; then by aid of the speculum and a small cotton swab, on an applicator, applying the pure Peroxide of Hydrogen, 15 volumes, to the entire mucous membrane, including the cervical canal, to be followed at once by an application of Glycozone. Insert into the vagina a roll of cotton saturated with Glcyozone, which serves to keep the inflamed surfaces apart. Use the same treatment for vulvitis.

ENDOMETRITIS.—In endometritis, when the discharge is white and acrid, or yellowish, greenish and fetid, apply full strength, 15 volumes, being careful not to wipe off the foam generated; follow by one application of a tampon, or tampons, saturated with Glycozone.

CHRONIC METRITIS.—Copious hot water vaginal douches; then apply full strength, Peroxide of Hydrogen, 15 volumes, followed by tampons of Glycozone, applied every other day. This treatment is worth the consideration of any member of this institute. It is, of course, understood that in all cases the indicated remedy must be used, combined, in the judgment of the physician.

In almost all cases where the Peroxide of Hydrogen is used in the nose or throat, it should be diluted one-third, one-fourth, one-half, three-fourths, and sometimes four-fifths, with pure distilled water.

My rule has been, except in cases of nasal catarrh, accompanied with much sneezing and very acrid excoriating discharge, to use it just strong enough to produce a very slight,tinkling sensation.

It should be borne in mind that, when used in the nasal cavities, it produces frequent sneezing, and if too excessive should be diluted still more. If its use on irritated, inflamed or ulcerated surfaces should produce a too free discharge of blood, you may conclude that it needs further weakening.

If you desire a better, quicker and more effective local treatment for carbuncles than carbolic acid, in conjunction with your constitutional remedies; inject pure medicinal Peroxide of Hydrogen by use of hypodermic syringe; a keen, cutting, stinging pain follows. When the pain has subsided, inject by same means, a few drops of Glycozone. I am only sorry my time will not permit me to enter as fully as I would like in explanation of its beneficial use, and speak of its great curative powers in eczematous vesicular eruption, in vesicular erysipelas, in aphthous and cancerous conditions of the mouth and of its value as an internal remedy in gaseous dyspepsia that will not respond to Lycopodium, China, Argentum, Magnesium, Phosphorus or Carbo veg.

As I have already indicated, I have great faith in the Peroxide of Hydrogen, in the treatment of consumption. Give inhalations on alternate days, of the Peroxide, and Hydrastis, at the same time giving nourishing food, and attending to other conditions. It has helped me to cure several well-developed cases of consumption. The use of the Hydrastis is not original with me, but the plan of alternating the two I have never known to be used by others.

I am loth to leave this, to me, interesting subject. I trust that it may be of benefit to you.

WAX IN THE EARS.

By A. S. TUCKLER, '92, C. M. C,, S. F.

(Published by the *California Medical Journal*, San Francisco, Cal., June, 1892,)

A simple method of removing "wax in the ears," is to take peroxide of hydrogen, (Marchand's) warm it in a water bath, then with an atomizer spray the meatus for about five minutes. This will soften and partially dissolve the cerumem. An ear spoon will now remove the mass and to the surprise of the patient, the sense of hearing will be immediately restored. A little more of the spray to cleanse the parts will be all that is necessary. This is a far safer method than the digging out process and not liable to perforate tympanum, an experience which the writer has been subjected to.

SOME PRACTICAL POINTS IN THERAPEUTICS.

By JOHN A. LARRABEE, M. D.

Professor of the Principles and Practice of Medicine, Hospital College of Medicine, Louisville, Kentucky.

(Abstract of paper read before the Louisville Medico-Chirurgical Society, Oct. 2, 1891).

Permit me, in conclusion, to make mention of those therapeutics agents which, during the summer months, have been weighed in my practice and have not been found wanting. In entero-colitic diarrhœa, the so-called "summer complaint" of cities, dependent upon the various micro-organisms, vitiated air, and bad food, salol, napthaline, carbolic acid, (nascent), calomel in minute doses and nitrate of silver, have stood the test. In gastro-enteritis, I have found salicylate of bismuth useful, and in inflammatory diarrhœas (the dysentery of some authors) of infants and older children, Rochelle or Epsom salts in acid infusion of roses with small doses of laudanum. In chronic cases the nitrous acid camphor mixture of Dr. Hope has not failed. For the gastric fevers so common in children, the preparations ammonia-phenique and sulpho-phenique of M. Declat have been used exclusively in a large number of cases with much better results than any former treatment; also the same for the exanthematæ. For "whooping cough," Declat's syrup coqueluche is nearly a specific. In diphtheria, locally, Marchand's peroxide of hydrogen and whiskey internally have established their value. A word in regard to the use of the peroxide. It should always be purchased in the smaller four ounce bottles, protected from the light by blue glass bottles and corked with rubber. That sold by the druggists from large bottles is, in the majority of cases worthless. It is a very unstable article, and unless it causes immediately a white, foamy reaction when brought into contact with the false membrane, it should be discarded and another lot obtained. I am satisfied that I use it more freely and more persistently than most practitioners. I use mops made by twisting a sort of absorbent cotton upon sticks, using as many as thirty or forty in the twenty-four hours. Such mops will take up nearly a half ounce apiece, and when forced well back into the pharynx, reach all parts. The gagging and resistance of the child assists in the distribution of the fluid. As soon as a mop has been used it is committed to the fire. In this way I have treated the worst as well as the milder forms of diphtheria with complete success. I believe that the systematic use of definite, although often toxical doses of whiskey, even in children of tender age, to be the surest safeguard against heart failure.

PEROXIDE OF HYDROGEN IN TYPHOID FEVER.

By H. F. WIGGIN, M. D., 55 W. 36TH ST., NEW YORK.

(Published by the *New York Medical Record*, November 28th, 1891.)

Having had good results in using Peroxide of Hydrogen locally in diphtheria and tonsillitis, and in infected wounds, it occurred to me, when a case of typhoid fever came under my care, during my summer practice, that this remedy might be beneficial, it being the most powerful non-poisonous germicide we possess.

On August 24th I was called to see Abby M.——, who gave a history of having been ill for a week with fever and diarrhœa. On examination I found a characteristic case of typhoid fever with temperature 104½° F.; pulse, 130; sore spots, abdominal pain, tympanites, diarrhœa, and mild delirium. I prescribed one ounce of fifteen volume peroxide of hydrogen* to eight ounces of water, to be taken every three hours, by the mouth.

*Since the above report has been published by the *New York Medical Record*, Dr. H. F. Wiggin stated April 14th, 1892, that Marchand's Peroxide of Hydrogen (medicinal) was used by him in this case.

On the following day I found the patient more comfortable; temperature, 103°F.; pulse 112; had had only two movements during the twenty-four hours; less delirium and less pain in head. On the 26th had had one movement; temperature 102°F.; pulse, 104; less tenderness in abdomen, and pain in the head diminishing. On the 27th, temperature, 100½° F.; pulse, 98; no movement; tympanites disappeared, and head, though still weak, clearer. On the 29th, temperature, 99½° F.; no movement. On the 30th, temperature normal; pulse 84; formed movement. The case now went on uninterruptedly to recovery, with nothing further of interest to report. On the 9th of September I discontinued my visits, the patient being discharged, cured, though weak.

One swallow does not make a summer, but I report this case hoping that some one who has larger opportunities for treating typhoid fever may take up the suggestion and let the result be known. The remedy is perfectly harmless, easy to take, and apparently was of very great value in this case.

SUBSTITUTION AND ITS ATTENDANT EVILS.

By JOHN AULDE, M. D., of Philadelphia, Pa.

(Published by *The Journal of the American Medical Association*, Chicago, Ill., December 5th, 1891.)

The evils attendant upon substitution and sophistication of remedial agents have long been surmised; they have not, however, until recently, received attention at the hands of the medical profession. Increased diagnostic skill, along with greatly improved facilities for the manufacture of medicaments, favor an approach toward mathematical exactness in computing therapeutics results. When these are wanting we challange the character of the remedy. The question which presents itself is: Has our patient received the true medicament or a base counterfeit? However attractive in theory, it will be found impractical for the medical profession to drift away from the pharmacists and it should be our aim to reward the faithful and bring the guilty to punishment. The friendly bond between the two professions should be honesty, as neither can afford to work independently: there is an interdependence which makes them mutually helpful.

It is said of Lawson Tait, that he has returned to first principles and carries a mill with him, so that when ergot is needed, he prepares it fresh with his own hand. The reliable character of Squibb's ether has been maintained through his business sagacity in having it prepared chemically pure and distributed all over the world in sealed cans, thus precluding the possibility of sophistication or substitution.

The life of a patient suffering from rheumatism may depend upon his being supplied with sodium salicylate prepared by a combination of Merck's chemically pure bicarbonate of soda and true salicylic acid obtained from oil of wintergreen, and yet few pharmacists, even in large cities, pretend to keep either in stock. They are the exception in Philadelphia, and doubtless the same is true of other cities.

Some years ago Dr. Squibb, of Brooklyn, set his seal on Marchand's peroxide of hydrogen, by endorsing its character and defending its merits as the most powerful and yet harmless bactericide which could be employed in the treatment of various formidable and fatal diseases. Dr. Robert T. Morris, Dr. Paul Gibier, and other well-known authorities have corroborated his statements from clinical observation, and as a consequence, a revolution has taken place in our methods of treatment in both medical and surgical practice. The efficacy of this simple remedy, its innocuousness and extended field of application, have shed a flood of light upon modern therapeutics, but at the same time there has followed in its train a host of worthless imitations.

The substitution of the commercial for the medicinal peroxide is calculated to work serious injury and destroy our confidence in a most potent remedy. In the treatment of

diphtheria, for instance, the commercial product is positively harmful. When deaths results, shall we blame the attending physician or the unscrupulous druggist who substitutes a base imitation for the genuine product? And still, pharmacists who claim to be respectable, do not hesitate to trifle thus with human life. Is it any wonder then, that our mortality percentages are on the wrong side?

Cascara sagrada has been counterfeited and sophisticated until it is almost impossible to secure a reliable preparation of this most useful medicament, although Parke, Davis & Co., the pioneers in its introduction, have adopted every means in their power for the protection of the medical profession. Antipyrin, a patented preparation, has met with phenomenal sales, and possesses distinct therapeutic properties, and as a result, imitations and substitutes are offered to take its place in medical practice. Whether these imitations are better or worse than the original product, I do not care to discuss; neither is it for the druggist to decide. The decision here, as to any special remedy or preparation, rests entirely with the physician, as he alone is responsible for the condition of his patient; no one else, not even the druggist, should be permitted to interfere with his directions. Substitution is an evil which should be guarded against; it is an evil which must be eradicated, or the entire medical structure will collapse. It is a duty we owe to ourselves and to our patients to look after this unnatural condition of affairs in which we are so vitally interested, and the time is near at hand when a systematic effort must be made with a view to accomplish the desired end.

This subject is commended to the attention of the American Medical Association, with the suggestion that a committee be appointed who shall recommend suitable measures for the protection of the medical profession from the evils of substitution and sophistication on the part of unscrupulous pharmacists. Shall we have a list?

4719 Frankford Avenue.

HYDROGEN PEROXIDE IN PELVIC ABSCESS.

(Published by the *Bacteriological World* of Battle Creek, Mich., December, 1891.)

We have for a number of years made the use of peroxide of hydrogen (Marchand's) in the treatment of suppurating surfaces, abscesses, etc., with excellent results, but have never observed a more gratifying result than that recently obtained in a case of pelvic abscess of long standing. The abscess discharged by a small opening just behind the cervix uteri, and was very profuse, and extraordinarily fœtid. Our stock of peroxide of hydrogen happened to be exhausted at the time, the new supply ordered being somewhat delayed in reaching us, and we at first employed listerine, using it in the proportion of one part to three of distilled water. There was no apparent effect upon the discharge, as regards either quantity or character. The odor continued as bad as ever. When the new supply of peroxide of hydrogen arrived, we immediately began using it in the proportion of one part to ten of distilled water, with the result that after the first washing the intensely fœtid odor disappeared entirely, the discharge became healthy in appearance, and diminished in quantity so rapidly that within ten days there was no discharge whatever, except at the washing, and then the quantity evacuated was not more than a dram, when it had previously been several ounces, besides continuous discharge in the intervals between the washings.

After the first washing with peroxide of hydrogen, the patient's temperature, which had for several months previously been above normal, fell to normal and has remained at that point since. There is certainly at present no agent known which could properly replace hydrogen peroxide as a disinfectant of unhealthy surfaces.

It would seem to be especially valuable in the treatment of abscesses, the discharges of which, through the relation of the cavity and the lower part of the alimentary canal, usually possess so repulsive an odor as to render the existence of the patient almost unendurable.

J. H. K.

DENTAL MEDICINE.

By R. M. CHASE, D. D. S., M. D., Bethel, Vt.

Abstract of paper read before the New England Dental Society, October 29th, 1891.

(Published by the *International Dental Journal*, Philadelphia, January, 1892.)

Peroxide of hydrogen still stands at the head as a germicide, and undoubtedly is one of the best antiseptics yet discovered to annihilate germs, bacteria, or microbes. *Charles Marchand's* preparation, $H_2 O_2$, is, I believe, the best article in the market, as peroxide of hydrogen is very susceptible to certain conditions. To get the best results it should be kept in a cool place, well stoppered and when required for use as much as desired should be poured from a large bottle into a small receptable, and only what is to be used should be exposed to the light. When small cavities are to be cleansed it should be injected with a small glass or rubber syringe, as metal should not be brought into contact with it as it quickly destroys its utility. For reaching pulp canals I find a small glass medicine dropper very convenient as by pressing upon the rubber bulb quickly it is forcibly ejected and is thus forced into the pulp canal without much trouble. I use a wooden tooth pick reduced in size to still further push it into the root. In treating all ill-conditions of the oral cavity I make it a rule to first rinse thoroughly the mouth with peroxide diluted, and then apply remedies suitable for the same. Much more could be said and undoubtedly will be brought out in this discussion upon this and other valuable antiseptics.

PEROXIDE OF HYDROGEN IN THE TREATMENT OF DIPHTHERIA.

(Published by the *North Western Medical Journal*, Minneapolis, Minn., February, 1892.)

In the next chapter, we shall give further details with regard to the treatment of diphtheria, but at this point we feel that we should not close without announcing in the most emphatic terms, that one of the most available agents that we have for the fighting of diphtheria locally, and preventing constitutional involvement, is the "Necessary Peroxide of Hydrogen" made by Chas. Marchand, of New York. We would take no chances by using any other manufacture. Charles Marchand was the pioneer in the development of this particular agent, for medical use. It is the "Medicinal" Peroxide of Hydrogen which can be depended upon to render diphtheria germs inert as thoroughly as water can be depended upon to put out a fire, or as heat can be relied upon to annihilate the icicle. We believe that every case of sore throat, whether pronounced diphtheria or not, as well as every case of scarlet fever, should have applied to the throat at intervals varying according to the necessities of the situation, the full strength of the Marchand's Peroxide of Hydrogen. It may be used as a gargle, though I am somewhat in favor of flushing the parts with a good syringe, or if this is not available, owing to the objection of the patient, particularly if it be a little one, atomizers are now furnished which act very efficiently, and by using them frequently, the full effects can be secured. It is well to give internally occasionally, teaspoonful doses of the peroxide. It may be diluted or not, as one pleases. All the secretion which has been swallowed will thus be acted upon in the stomach. In addition, there is a general accumulation of fermentative products in the stomach, undigested food, etc. The oxidation of these irritants is desirable. If the patient complains that the application is irritating, it may be diluted with one, two or three parts of water.

The position which we took nearly four years ago with reference to the use of Peroxide of Hydrogen in the treatment of diphtheria in a paper read before the St. Louis Medical Society, has been strengthened with the experience which has followed. We would emphasize every material point then made in that paper. If asked "if we were to depend upon only one agent in the local treatment of diphtheria, what would we call for," the response would be emphatic, in thundering tones, "Marchand's Peroxide of Hydrogen," and

if we ascertain that any druggist furnished our patient with any other than Marchand's it would be sufficient for us to condemn that druggist and rather than run the gauntlet of his repeating the offence, we would supply the medicament at our own expense.

RECENT INVESTIGATIONS RELATING TO THE PREVENTION OF DIPHTHERIA AND SCARLET FEVER.

By DR. J. LEWIS SMITH,

Professor Diseases of Children, Bellevue Medical College, New York.

Abstract of paper read before the New York County Medical Association, March 21st, 1892.

(Published by the *Doctor's Weekly*, March 26th, 1892.)

In his report the author entered fully into the pathology and etiology of the two diseases, and dwelt at some length on their differential diagnosis. He related many interesting facts in connection with the contagiousness of diphtheria, spoke of a case of the disease resulting from the employment of a brush that had been used for swabbing the throat four years before in a similar trouble. Does not believe diphtheria ever originates *de novo*, that it is dependent at all times on the presence of a specific microbe. Damp cellars, the presence of sewer gas and other unsanitary conditions contribute largely to its development. Many mild attacks of the disease are overlooked by the attending physician, and as a consequence it is communicated to others, notably in the school room. He believes in thorough disinfection as a means of preventing a spread of the disease. Does not have much faith in sulphur for this purpose; prefers a strong solution of corrosive sublimate or five per cent. solution of carbolic acid. This should be used freely on walls and floors of rooms where the disease prevails. With the same solution the bedstead and other articles of furniture should be thoroughly washed.

In examining patients suspected of having diphtheria or scarlet fever, the physician should place himself on one side or in rear and not in front, as is usually the practice. In this manner he avoids the dangers of any diseased matter that might be coughed up by the patient. After such examinations the physician should thoroughly bathe his hands and face in a solution of corrosive sublimate. Exclude everybody but the physician and nurse from the room where a case of either disease exists. While small-pox is thoroughly under control in this city, he doesn't think it possible to gain such control over the two diseases under discussion. The crowded condition of our large tenement houses supplies so much material for their ravages that it is impossible to stamp them out. For the purpose of illustration, the reader related the following experience:

He was called to see the child of a poor woman, living in a tenement house in which there were twenty-seven families. He found a child two years old very sick with diphtheria. Five other children lived in the same rooms; of these, two were away at the time of his visit, at school. Just think of the hundreds of children thus exposed! The sick child died two days later.

For purposes of fumigation the author recommended the following:

℞ Ol. Eucalyptus,
Acid carbolic, aa ʒ j.
Spts. Turpentine, ʒ viij.

M. Add two tablespoonfuls of this mixture to a pint of water and evaporate by aid of a lamp; or cloths saturated with the mixture may be hung around the room.

Does not believe in the efficacy of sulphur fumigation. Microbes in a state of activity may be found in the sweepings obtained from a room that has been fumigated with sulphur.

For the local treatment of diphtheria and scarlet fever, he recommends the following

℞ Ol. Eucalyptus,
Acid Carbolic, aa ʒ j.
Ol. Olive, ʒ vij.

M. Sig. Apply every three hours.

He also uses Marchand's medicinal Peroxide of Hydrogen one part, to three parts of

water, with much satisfaction. It is prompt in action and quickly destroys the diphtheritic membrane.

Dr. Smith's paper was discussed by Drs. Leale, Tyndale and Koplik.

SOME NOTES ON THE VALUE OF PEROXIDE OF HYDROGEN

EDITOR OF *Practice*, Richmond, Va.:

Having read in the January number of your excellent journal, the experience of Dr. S. Potts Eagleton in the use of "Hydrogen Peroxide in Surgical Affections," I am prompted to send you for publication the following:

In January I was called to see a lady in her seventy-sixth year of age, suffering, as her husband supposed, from an inguinal hernia, but upon careful examination, I diagnosed a deep-seated abscess, and at once ordered hot poultices, to be made of equal parts of flax-seed and corn meal, and applied in the following manner over the skin: White gauze, hot poultice, muslin, oil silk, After a few poultices had been used it was in a condition to be opened. A good incision, giving free drainage was made. The cavity was eight inches in depth. Every day the cavity is syringed with "Peroxide of Hydrogen" (Marchand's,) full strength.

The first effect noticed was the rapid oxidation of all purulent matter, which caused the distention of the cavity with the gas eliminated as a frothy yellowish (or yellowish-green) bubbling substance. After the oxidation is completed the wound is always in a clean, sweet condition, absolutely free from pus. The cavity is dusted with iodoform, and antiseptic dressings applied. The cavity is gradually healing up from the bottom. In my experience "Peroxide of Hydrogen" (Marchand's) perceptibly diminishes the pus formation. In this connection, I will also state that I am using "Peroxide of Hydrogen" in a case upon which I operated February 16th, and from which was removed a large multilocular ovarian tumor and also an enlarged uterus with many fibroids (hysterectomy). The wound (stump) is in a healthy condition; her general condition is good. Indeed, she is getting along finely. The clamp came away yesterday. The sixteenth day was up yesterday, counting by hours, from the time of the operation. The wound is in a healthy state, and perfectly healed. Hardly a day passes that I am not using the "Peroxide of Hydrogen" in my practice. I send you these notes, hoping they will assist some brother practitioner who may be a reader of your practical journal. Doctors *talk* with each other about their cases, and I believe they are as much interested in exchanging their experiences by correspondence. We are all mutually concerned.

Very truly yours, ROBERT T. WILSON, M. D.,
(Assistant Surgeon to the Hospital for the Women of Maryland.)
Baltimore, Md., March 4, 1892.

DIPHTHERIA, LOCAL TREATMENT.

BY I. N. LOVE, M. D., ST. LOUIS, MO.

(Published by the *Medical Mirror*, of St. Louis, March, 1892.)

Judgment should be exercised in this as in everything else. If we select the applications properly they will be sufficiently agreeable as not to annoy or irritate more than they benefit. It may be necessary to avail an opportunity for the application; for the patient may be fretful, easily demoralized by being disturbed; we should wait until rest has been secured, until the sensibilities have been obtunded by proper internal medication. We should bring to bear our ingenuity to the fullest and diplomacy also; if possible ascertain if the child has a fondness for any particular thing. We should arrange a plan by which a reward in prospect may assist in accomplishing our desires.

For its germicidal effect, and also for the removal of the mechanical obstruction produced by the diphtheritic membrane, Marchand's Peroxide of Hydrogen, (medicinal) should be used promptly, in its full strength, but later it may be diluted to one-half strength. As the mucous membrane becomes exposed after the removal of the deposit, by the means just mentioned, it is important to have on hand an application which is soothing, astringent and at the same time as much antiseptic as it can be made.

I have found the following valuable for this purpose:

℞ Katharmon., ℥ ij.
Glycerine, ℥ j,
Aquæ Cinnamonis, ℥ iij. Sig.

The Peroxide of Hydrogen may be labeled No. 1, the formula just written No. 2. The best means of applying both applications is either by a glass syringe, or an atomizer made of hard rubber; but in case neither of these appliances are at hand or available, a piece of wire (silver or platinum) of good strength, may be bent, with a hook at the end, in such a manner, as to serve as a probang by wrapping a pledget of absorbent cotton at the point; the application may be made after thoroughly wetting the same with the solution. No. 2 application should follow No. 1, and will be gratefully received by the little patient.

WOUND CLOSURE AFTER THE EMPYEMA OPERATION

By CHARLES W. AITKIN, M. D., Flemingsburg, Ky.

(Published by the *Ohio Medical Journal*, of Cincinnati, April, 1892.,

Several times the writer has found it difficult to close the wound made in an operation for empyema, especially if the empyema was of any magnitude or of long standing, so that the lung's function was destroyed by compression, and bound down by adhesions.

Mrs. V., æt. 32, of Bath County, Ky., was confined April 20, 1891. The physician in attendance, Dr. Judy, informs me that there was nothing abnormal in the labor. On April 30th the patient had a chill, and for several days the temperature ranged from 103° to 104°.5. After a few days more she began to complain of pain in left chest and shoulder. I saw her May 24th, in consultation with Drs. Judy and Sharpe, and we agreed to aspirate the left chest; over four pints of fluid were removed; two and one-half pints were fair serum, but the last one and one-half pints had some purulent appearance. During the next six weeks the patient was aspirated several times, and over ten pints of sero purulent fluid was removed at these various tappings. At this time a thoracotomy was decided upon. The patient was taken to the Good Samaritan Hospital, and with the aid of Dr. French, with the house physicians, Drs. Buel and Schoolfield, I opened the chest and let out over four pints of pus, the cavity was thoroughly washed with a saturated boracic solution, and the usual drainage and dressing applied, the case was left in Dr. French's care. The flow of pus was considerable for a week, after that time the boracic irrigation was followed by washing the cavity every day with Peroxide of Hydrogen. The quantity or pus rapidly diminished, the patient gained in strength and weight, and in about four weeks more came back to her Kentucky home. Her husband continued washing the cavity with both the boric solution and $H_2 O_2$ until September 12th, when I again looked after the case for a week, preparatory to closing the wound, but as there was still an ounce or so of pus passing per diem, it was thought advisable to continue the Peroxide a while longer. This was kept up a month, when the quantity discharged was not more than one-half ounce a day, but to shut off this drainage for twenty-four hours would cause an elevated temperature and general septic symptoms; at this time a 1 to 4000 bichloride solution was substituted for the boracic solution, the $H_2 O_2$ being continued, a slight bloody discharge was thrown out for a few days, but lessened gradually, until November 3, when I washed the cavity with a 1 to 5000 bichloride solution, followed with the Peroxide of Hydrogen for a few days, and let the wound heal without any unpleasant symptoms. The chest was measured during February,

1892, and at auxillary, mammary and ensiform levels, the left semi-circumferencc was one inch less than the right. The Peroxide of Hydrogen certainly aided very materially in arresting the suppurative process. Marchand's pure Peroxide of Hydrogen was used with but little dilution.

AN INTERESTING CASE OF EMPYEMA WITH SPECIAL REFERENCE TO THE USE OF PEROXIDE OF HYDROGEN.

By H. F. BROWNLEE, M. D., of Danbury, Conn.

(Published by *New England Medical Monthly*, June, 1892.)

This case is interesting in many ways; namely: the length of time which elapsed previous to diagnosis, the degree of exhaustion present at that time, the amount of pus evacuated, and finally, the perfect and rapid recovery of the patient.

Previous to his sickness, this patient was a strong healthy man of about 30 years of age, but who for a few years past had indulged in rather frequent dissipation.

About Dec. 20th he was suddenly taken very sick. The attending physician diagnosed pneumonia and began a vigorous course of treatment which he continued for four weeks. The pneumonia did not resolve but the attending physician continued diligently in his efforts to bring about resolution and at the time I saw him first, over four weeks after the beginning of the attack he was supplied with four glasses of medicine with instructions to take a teaspoonful of each every hour. Upon examination I diagnosed empyema and demonstrated it by the introduction of a hypodermic needle.

At this time the patient was in a condition of extreme exhaustion; temp. 105. pulse hardly perceptible, respiration 48. I had him removed at once to the Danbury hospital; a small amount of ether was administered and a resection performed, removing about an inch of the sixth rib in the axillary line. An opening was then made into the pleural cavity and two gallons of pus evacuated. I did not know the maximum amount of pus ever evacuated in a case of this kind, but I can hardly conceive of a greater amount being contained in the pleural cavity of an ordinary man. The cavity was washed out with Thiersch's Sol. and two large drainage tubes placed in the wound. The patient became quite cyanotic during the operation and required very active stimulation for several hours afterward.

So much for the case itself, now a few words in regard to his treatment and course of recovery. For two weeks the pleural cavity was washed out every day with Thiersch's Sol. The patient slowly improved but his temperature continued to rise every evening to 102 or 103. I then substituted a Sol. of Hydrarg. Bichloride 1-5000. This was used about a week when a very active salivation presented itself. During this time the temperature did not run so high but still continued at about 101 to 101½ in the evening. I then began washing out the cavity with Peroxide of Hydrogen and if I had done this before I would certainly have gained considerable time. I used Marchand's preparation, full strength, putting in a considerable quantity of it with a small syringe, then allowing it to escape and finally washing it all out with a weak Borated Solution.

From this time my patient began rapidly to improve. The temperature fell to almost nothing, rarely exceeding 99½ at night. In two weeks from this time the discharge had entirely stopped and I was able to remove my drainage tubes, the wound closing in a few days. He gained rapidly in strength and in eight weeks from the day of operation he was able to return to work.

I can not say too much in praise of Marchand's Peroxide of Hydrogen (Medicinal) in the treatment of this case. It kept the pleural cavity so clean that there was hardly any septic absorption and finally prevented all formation of pus, the discharge ceasing entirely in two weeks from the time I began its use.

THE VALUE OF PEROXIDE OF HYDROGEN IN THE TREATMENT OF CHRONIC GONORRHŒA, ILLUSTRATED BY A CASE.

By WILLIAMS ROBERTS, Hospital Steward, U. S. Army, Plattsburgh Barracks, N. Y.

(Published by *The Journal of the American Medical Association* of Chicago, Ill., April 30, 1892.)

During the past few years, the many articles on new drugs in the treatment of gonorrhœa leave nothing to be desired in this way. The present aritcle contains nothing new, but simply gives the history of a case of chronic gonorrhœa arrested by the use of Peroxide of Hydrogen—a drug that is "going the rounds," probably to be discarded by reason of its being so unhandy and so little understood.

The following case might serve to illustrate the value of Peroxide of Hydrogen, when used under conditions favorable to the preservation of the drug.

J. H., citizen, age 23, contracted a gonorrhœa March 20, 1890, and received the usual orthodox treatment by internal medication up to July 7th, 1890, the date at which the patient came under my observation. I found a subacute gonorrhœa, which was somewhat relieved by urethral injections, including the iodoform et tannic injection of Dr. Otis.

On August 15th, 1890, the patient complained of difficult micturition, and upon examining the urethral canal, I found the following condition.

Size of urethra at bulb, No. 32 French; 4 inches from meatus, a No. 21 sticture, meatus contracted to No. 20.

The constriction at the meatus was relieved by incision, and the stricture readily yielded to gradual dilatation, and on August 31, 1890, a No. 31 sound was passed without pain. On September 1, 1890, an examination of the urethral canal showed the presence of a small ulcer at the side of the old stricture, and stimulating injections were ordered—without, however, relieving the "morning drop," This drop I examined microscopically, and found pus and mucus corpuscles, with small gonorrhœal threads.

On December 10, 1890, I again examined the urethra, and found the conditions about the same, I had tried the whole list of anti-gonorrhœal remedies, including the medicated urethral bougies and the passage of steel sounds, and was somewhat puzzled to relieve the obstinate form which the disease had assumed.

On January 26, 1891, I commenced the use of Marchand's Peroxide of Hydrogen, 15 vol., and "glycozone," with the following results: Two drachms of a mixture of R. Peroxide of Hydrogen, oz. ss, aqua. oz. iss, M., was used to distend the urethra, and held for thirty seconds, then allowed to escape. The decomposition of the $H_2 O_2$ was very active, showing the presence of pus. I then injected 1 drachm, which was allowed to remain in the canal two minutes. I repeated this procedure t. i. d., and at bedtime injected one drachm of "glycozone," This treatment was pursued up to February 9, 1891, when there was no discharge, and the patient declared himself cured.

I had watched this case with great interest, for it was the most obstinate one I had ever seen in not yielding to some one of the many lauded cures for chronic gonorrhœa. During seven months the patient had been under constant treatment, to find that a three weeks' course of treatment by Peroxide of Hydrogen terminated the case quite satisfactorily.

The above data might naturally turn the reader's thoughts to the nature of the remedial agent that succeeded where all others had failed.

The Peroxide of Hydrogen was that prepared by Chas. Marchand of New York. The chemistry of this compound together with the pathological conditions it may be applied to, I will leave to the many advertising agents and will simply state the care with which the preparation should be preserved; for there are factors which utterly destroy the medicinal properties of this valuable agent.

PEROXIDE OF HYDROGEN AS A DEODORIZER, IN CANCER OF THE UTERUS.

By GEORGE W. KAAN, M. D.,

Surgical to Out-Patients, Free Hospital for Women, Boston.

(Published by the *Boston Medical and Surgical Journal*, April 7, 1892.)

The value of peroxide of hydrogen in washing out sinuses and abscess cavities, has led me to use it recently as a vaginal injection in cancer of the uterus; and with gratifying results.

My cases have been few; but in each the distinctive cancerous odor was noticeable about the patient before the use of the peroxide of hydrogen, and absent afterwards. In one out-patient case the fetor was so pronounced, that the air of the room seemed saturated with it, the moment she entered. When I last saw her in making an examination no odor was perceptible a foot from the vulva, and only slightly so close to it. In this case she had used the injection the night before, and a cancerous mass as large as a man's fist, hangs in the vagina, within two inches of the vulva. This case has had palliative treatment in the hospital, by curretting, Paquelin's cautery, and chloride of zinc applications. When she first came to me the disease had extended over the whole anterior vaginal wall; since then the peroxide of hydrogen has been used, and the anterior wall is clear. It seems to me that the injections have had some curative action.

Further observation, of course, is necessary, but bearing in mind what Sir Spencer Wells says of cancer and cancerous diseases, that every thing in relation to it is so important that nothing should be thought a trifle, and my material being limited, I venture to state the facts as they appear to me in this case.

Regardless, however, of any value it may have as a curative agent, its use as a deodorizer, and this without substituting another odor for the cancerous one, makes it of inestimable worth in adding to the comfort of the patient, where palliative treatment alone is all that remains.

The method of using has been to take about an ounce of the peroxide of hydrogen and an equal quantity of water, warmed by being placed in a pan of hot water, and injected through a soft rubber catheter, so that the injection shall be sure to reach the back part of the vagina. Such an injection once or twice a day has been sufficient.

PEROXIDE OF HYDROGEN AS A LOCAL APPLICATION IN RHUS TOX POISONING.

By DR. N. H. HAIGHT, Oakland, Cal.

Published by *The Homœpathic News*, of St. Louis, Mo., July, 1892.

May 20th, 1892, I was called to treat a young lady who was suffering from the effects of poison oak. She had been suffering for nearly a week, and had tried everything that friends had recommended, but continued to grow worse. The left side of her face was so badly swollen that the eye of that side was entirely closed and she was suffering intense itching and pain.

I have never heard of Peroxide of Hydrogen being employed in such cases before, but not feeling satisfied with the treatment that I had used in the past, I decided to experiment on this case. I used Marchand's Peroxide of Hydrogen (medicinal), feeling sure that it would reduce the inflammation, and by so doing, it would naturally allay the itching. I used in the following proportions: Peroxide of Hydrogen, 1 part; distilled water 2 parts; applied to the affected parts every hour. I also gave internal treatment of croton tig. 200. The next morning I called to see how the case was progressing, and found her very comfortable, the itching and swelling being very much less. I continued the same treatment, and on the fourth day the case was cured. On another case I used $H_2 O_2$ 1 part, tincture grendilla robusta 2 parts with equally good results but no better.

MEDICINAL VS. COMMERCIAL PEROXIDE OF HYDROGEN.

SALINA, KAS., *August 15th, 1892.*

TO THE EDITOR OF THE *Medical Herald*, ST. JOSEPH, MO.:

Professional indifference and professional inactivity are probably the two greatest enemies to our individual progress in the profession. Whereas cultivation will alone fit us individually with that broad-guage knowledge, the practical appreciation of which marks, with lasting effect, the progress to success. Hence, earnest interest and labor are essential requisites, if we would learn to discriminate between the opportunities presenting, lest we cultivate a flowerless plant or we find weeds instead of roses when we look for success. This is aptly illustrated by the course pursued with regard to the selection of remedial agents by so many of us in the profession, from time to time, and probably in no instance more forcibly than in the use of Peroxide of Hydrogen, ($H_2 O_2$.) In this connection, I feel it but a personal duty to the profession to record my own experience with this agent, having for several years made use of Peroxide of Hydrogen in suitable cases (*i. e.* chiefly where pus formation was found), with very varying results. Like most of my brethren, I took it for granted that $H_2 O_2$ was the same, so long as it was made by our leading manufacturing chemists, and consequently paid no attention as to the effects of special brands, since I felt confident that my druggist was handling only the products of first-class manufacturers, and could distinguish between the "Commercial" and "Medicinal" articles. The result being that I was not impressed with anything like an absolute confidence in this agent to arrest pus formation. It was not till in October, 1891, when in attendance at the annual meeting of the Mississippi Valley Medical Association in St. Louis, that in a personal interview with Dr. Charles Marchand, of New York, relative to the product of his manufacture, that I decided to give this agent another fair trial, and watching the effects carefully with reference to the different makes in the market. This upon the avowed assurance of Dr. Marchand, that there was a most striking difference in the result of using the product of different manufacturers. After almost another year of numerous trials and careful, accurate observation with a number of different makes in the market, I am prepared to confidently endorse all that is claimed for the superiority of Marchand's make. I have used three different products alike in abscesses of almost every description, ulcers, gangrene, cancer, endometritis, specific vaginitis, diphtheria, etc., etc., and in each and every instance Marchand's preparation proved above all, not only the most effectual, but in every way a most satisfactory agent for arresting pus formation, and as a non-irritating antiseptic for general use. Therefore, I most earnestly counsel my fellow co-laborers in the profession to be particular in specifying Marchand's Peroxide of Hydrogen (medicinal) whenever this agent is called in use by them.

W. B. DEWEES, M. D.

RETAINED NASAL SECRETION OR SYPHILITIC RHINITIS?*

By C. E. PERKINS, M. D., Sandusky, O.

Published by the *Medical Standard* of Chicago, Ill., Oct., 1892.

Few cases of acute catarrhal rhinitis are sufficiently severe to compel a patient to consult a physician. When such cases occur the symptoms are severe and the diagnosis difficult.

February 7, a 30-year-old unmarried woman, with negative family history as to tuberculosis, rheumatism or lues, consulted me. There was no evidence of lues. The patient had an attack of measles in 1891, from which she and five other members of the family recovered without results of any kind. Up to the commencement of this trouble she had been exceptionally healthy and robust, having never required the services of a physician.

In the latter part of October last she was taken with what she considered an ordinary cold. There were the ordinary symptoms of acute catarrhal rhinitis, viz.: malaise, dryness and heat of the nose followed by discharge, etc., but she had in addition to all these a severe neuralgia on the right side of the face, which persisted for about a month. Early in December complete stenosis of the right side of the nose developed and the left was partially occluded. At this time there was a swelling across the nose, frontal and nasal pains, and slight epiphora, and there was very little running from the nose and that of a watery character. About these same symptoms continued until just before Christmas when she consulted her physician. I am quite certain that he considered the case as one of nasal syphilis, for he prescribed mercurial inunctions and insufflated iodoform daily. She continued under his care for six weeks. At one time in January she had a hoarseness for one week. The right nostril continued occluded, and the left became completely so, although he was adopting rigorous anti-syphilitic treatment. Not making any improvement she consulted me on February 9. I found her weak and anæmic and somewhat emaciated. There was complete loss of appetite, and swelling, redness and pains across the nose.

These pains were so severe as to interfere with sleep; there was complete stenosis of both nasal passages which caused the characteristic voice of nasal occlusion. This, upon inspection, appeared to be due to thickening and infiltration of the turbinated bodies and septum; they were in contact about one-fourth of an inch from the anterior nares. Having benumbed the parts with cocaine, I introduced a probe wound with cotton, beyond this point of contact and brought out some cheesy matter of disagreeable odor. I was unable to get a thorough view of the nasal cavities at that time, so I directed her to return on the following day; then I found the œdema somewhat subsided, and saw that there was a polypoid enlargement of the middle turbinated bodies which acted as a valve to imprison the decomposing material.

This I removed with a cold wire snare, and thus opened up a regular cavity on each side, from which I removed at least an ounce of foul-smelling, cheesy pus. I might add that this accummulation was above the middle turbinateds so far as I could make out. As the parts were thus opened, and the discharge was enabled to make an exit, it gave rise, by running down into the throat, to a very distressing nausea. This I succeeded in relieving by daily removing these secretions and spraying the nares with a solution of Peroxide of Hydrogen ("Marchand's") one to four of water, and a mixture, taken internally, of pepsin and bismuth. I also prescribed champagne. Under this treatment the patient soon began to improve. She regained her appetite, the stenosis was elieved, fœtor stopped, and she began to gain in flesh and strength, and on March 4th

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Ohio Med. Soc. Trans. Cond.

I permitted her to go home, some ten miles, to report occasionally; she continued to improve until March 24th when she returned complaining of obstruction in the right nasal cavity. Then I removed the last bit of decomposed mucus, which had become very much hardened; since which time she has remained well. I examined her on April 26th and found the nasal cavities as nearly normal as we are accustomed to see them; there was no ulceration nor was there any perforation of the septum, or anything to suggest that a syphilitic process had been going on.

TREATMENT OF DIPHTHERIA.

Read Before the Massachusetts Homeopathic Medical Society.

By J. H. SHERMAN, M. D., Boston.

Published by the *New England Medical Gazette*, Boston, Mass., October, 1892.

Intelligent treatment of diphtheria as well as intelligent treatment of other diseases presupposes true conceptions of the nature of the disease. I take it for granted, with the incontrovertible evidence on the subject, that the cause of the disease, diphtheria, is the introduction into the system of microscopic germs, bacteria. Without these germs no diptheria. The first point of attack is the natural one where in the act of breathing they would come in contact with the tonsils and soft palate or mucous membrane of the nose. In mild attacks the disease remains a local one, the general system becoming little affected. In the severe cases it extends to almost every organ in the body.

On the supposition that the disease is caused by germs, then to cure the disease, we must destroy or antagonize them. Have we any remedy that will do this? Yes, several; bichloride of mercury is the chief, but doses sufficient to overcome the germs would be dangerous to the patient. We have long been looking for a remedy that would be a potent germ-destroyer and still one harmless to the patient. I believe that remedy is now found. Some four years ago there was sent to me a pamphlet treating of Peroxide of Hydrogen, and the author especially dwelt upon the efficacy as an oxidizer of pus. About this time I had a patient in the Homœopathic Hospital under treatment for cancer of the cervix uteri, and asked one of the staff of the able corps of surgeons what he thought of Peroxide of Hydrogen as an application to the broken down cervix. His reply was that he did not think much of it; and having such great confidence in my friend's judgment, I relegated it to the list of the numberless nostrums that we are invited to investigate. A few months ago my attention was again called to this remedy by a circular of testimonials from men eminent in the profession, and from all schools of practice. These men had proven it to be a safe and certain germicide. I sent for a half pound bottle of this remedy and waited for a suitable case on which to test it. It soon came. On August 29, 1891, I was called to Mrs. B—, Athens Street, an unhealthy locality, with cesspool connecting with street sewer directly in front of the house, and the street a very narrow one. Found my patient in bed with history of three days' illness, fever, malaise, sore and swollen throat. On looking into the throat I found tonsils, uvula, and soft palate covered with the characteristic diphtheritic deposit, and portions of it assumed that dark hue so characteristic of fatal cases, and almost certain to be followed by the septic form of the disease. There was much swelling of the sub-maxillary, sub-lingual, cervical and parotid glands. Deglutition was accomplished with great difficulty, a considerable portion of any liquid swallowed returning through the nose. There were also prominent laryngeal symptoms, croupous cough, etc., showing that the disease had already invaded the larynx. From previous experience in such cases my prognosis was unfavorable, for such cases are generally fatal even in good constitutions, under which head this patient could not be classed; her general

health being rather below par. I began treatment by spraying the throat with Marchand's Peroxide of Hydrogen (medicinal) by the means of a hand atomizer with hard rubber attachments, as metallic ones are oxidized by the remedy. The effect was immediately apparent on the diphtheritic deposit. I could see dissolution of the membrane about the thin edges, the fibrinous portion contracting into a smaller compass. The patient complained however of an extreme smarting sensation in the throat so that I felt obliged to dilute the peroxide with an equal quantity of water which did not seem to materially impair its efficacy. These inhalations or rather sprayings were repeated every two hours, and the time occupied at each seance from five to ten minutes. The dark necrotic condition had changed in twelve hours to the more common grayish-white deposit. From this time on there was a gradual diminishing of the exudation, although there was a persistent tendency to re-appearance of the membrane after it had been removed. The only internal remedies given were arsenicum, bichromate of potash, and glycozone. The arsenicum for the general condition of the system, the bichromate for the croupy or laryngeal complication, and the glycozone to destroy the bacteria, the ptomaines and leucomaines that may have found their way into the stomach, alimentary canal, the absorbent and circulatory systems. It was five days before the throat was free from diphtheritic deposit, and some eight days before the glandular swelling had subsided. There was but a remnant of the uvula left after the sloughing off of the membrane, and a loss of voice from the fourth to the fifteenth day. The patient was greatly prostrated from the first, and rallied rather slowly under the use of concentrated nutriment and mild stimulants. On the whole, considering the gravity of the case, the result was better than I have before witnessed in similar cases.

Another case worthy of mention in this connection is the following: On March the 31st, 1892, was called up very early in the morning to see Master Terrance V. Freeman, aged three years and three months. The father told me the child had been ill for about a week with what he and his wife considered an ordinary cold, but soon after midnight of the present morning he was seized with a distressing croupy cough. On visiting the little patient I found the characteristic croup symptoms were apparent. I made an examination of the throat and found both tonsils covered with diphtheritic membrane. My prescription was bichromate of potash first decimal trituration in half a glass of water, and carbonate of ammonia, one drachm in four ounces of cinnamon water. These remedies were given in alternation every one and one-half hours, and the throat was sprayed every two hours, night and day, with equal parts of Marchand's Peroxide of Hydrogen and water by means of a hand atomizer with hard rubber attachments. This line of treatment was persisted in with alternate remission and exacerbation of the symptoms for five days, when the disease seemed under subjection, and convalescence secured, which continued uninterruptedly until the tenth day, when I discharged the case. This child was naturally a frail-looking child, though it showed a remarkable vitality through this severe and protracted disease. It was given from the first all the nutritious food it could be induced to take, consisting mostly of milk and bovinine. That it was diphtheritic croup was evidenced by the membrane detached and coughed up at different times during the disease. On one or two occasions the child nearly suffocated by the loose membrane being drawn into the larynx or trachea, and subsequently expelled. It is my opinion that this child would have died had it not been for the Peroxide of Hydrogen. It may seem a difficult thing to spray a child's throat effectively for five minutes at each seance, as the child will not voluntarily hold its mouth open. I overcame this difficulty by putting a fork-handle between the teeth on one side of the mouth, and having it held by an assistant standing behind the child and holding its head in position at the same time.

I have used this remedy, Peroxide of Hydrogen, in several other cases of diphtheria of a mild form, which would not be of interest to report as they all made satisfactory recoveries, and probably would have under usual treatment.

What is Peroxide of Hydrogen? "The name hydrogen dioxide expresses its composition, and its formula H_2O_2 represents this name. Hydrogen monoxide, H_2O, or water, can under certain conditions, be made to combine with a second molecule of oxy-

gen, the result being a water-like liquid, H_2O_2." This agent is one and one-half times more potent as a germicide than corrosive sublimate and perfectly harmless. It is adapted to all zymotic diseases and suppurative processes. It will follow a pus sinus as a ferret will follow a rat, and be sure of destroying the pus and germs.

I alluded to this remedy some months since at a meeting of the Boston Homœopathic Medical Society, when the subject of Gonorrhœa was under discussion, and the editor of our much valued GAZETTE remarked that there was scarcely anything in medical literature concerning it, and that what was known about the remedy came chiefly from the manufacturer. This caused me to look up the subject, and I find an amount of published testimony altogether to voluminous to be quoted.

MEDICAL DEPARTMENT SURGEON-GENERAL'S OFFICE.

Headquarters of the First Brigade Michigan State Troops.

TECUMSCH, Mich., Sept. 15th, 1892.

CHAS. MARCHAND, N. Y.:

DEAR SIR—I promised you I would write you further about the Peroxide of Hydrogen (medicinal) manufactured by yourself.

I have cured a great number of cases of throat diseases with it, and one case of severe cystitis in an old man of 70, which I had treated with mild solutions of corrosive sublimate for nearly two weeks; he was benefitted a little. I then used one-half ounce of your Peroxide of Hydrogen to a pint of boiled and strained rain water, and washed out the bladder thoroughly with this,—the man got up next day and was up every day after that, was well in three days with only the one injection or washing, it is worth its weight if used only in cases of cystitis.

Yours truly,

C. M. WOODWARD, Surg. General M. S. T.

THE PEROXIDE OF HYDROGEN (MEDICINAL); AN INDISPENSABLE WOUND STERILIZER.

BY GEO. H. PIERCE, M. D., BROOKLYN, N. Y.

(Published by *New England Medical Monthly*, November, 1892.)

Probably the use most frequently made of this preparation, is in the cleansing of pus cavities, and suppurating surfaces. Any trace of pus remaining in any recess which an ordinary douch will not reach, is at once sought out by the peroxide, decomposed, and brought to the surface, in bubbles of gas. It is useful in cleansing off ulcers, sloughs and gangrenous tissues, chancres, diphtheritic patches, etc., and in cleansing sinuses, and suppurating cavities, such as the pleural in empyæma, and the uterus where there is putrid discharge, and in cleansing abscesses where either puncture or free incision has been made, it is invaluable, clearing out the pus as nothing else can do. There is one class of disease where its local action as a cleanser must be seen to be appreciated; and that is as a disinfectant for foul gangrenous growths. In a case of extensive epitheliomia of the face, where only pilliative measures were of use, I found the Peroxide of Hydrogen a very Godsend. This case was one of the most foul I had ever witnessed. When I first saw it, the odor from it was so great that it filled the house. It was cov-

ered with a cloth into which the discharge had accumulated, thus adding a greater bulk of fetid decomposition; and to add to the horror, for such it was, upon removing the cloth, the surface was swarming with maggots, as large and active, as may be found in a heap of decomposing garbage, and not only on the surface, but they extended deeply in sinuses below the ear where it was impossible to reach them, except as they would come to the surface. My first impulse was to invoke Beelzebub for some patent exterminator, but finding myself left to my own resources, I set about bringing destruction as best I could. As time was of some moment, I removed what I could reach with dressing forceps, then douched with bichloride, 1-1000, then with Peroxide of Hydrogen, 15 vol. strength, rinsed this off with warm water, and douched again thoroughly, with permanganate of potash solution, and finally dusted the whole with beechwood charcoal-which, in addition to acting as an absorbent to the gases, made an appearance very much to be preferred to the ordinary gangrenous appearance. I ordered the cloth to be left off entirely; first, because it only added an additional fetid surface, and second, be cause the growth was very vascular and would bleed easily on being disturbed. It was dressed morning and night, and henceforth was kept almost entirely free from odor.

The same routine was gone through with each day. First, Peroxide of Hydrogen, which was applied by pouring it directly from the *bottle in which it came*, an absorbent cotton held by dressing forceps, so that it dropped directly on the growth; when immediately a white foam would cover the surface, from the disintegration of pus, gangrenous shreds, blood, etc. Second, rinsing off with warm water, then with permanganate of potash sol. gr. ij., cupful of water, allowing it to drip from a wad of cotton over the surface. Third, dusting with charcoal and leaving it uncovered. An immense lot of Peroxide was consumed in this case, being purchased in ½ lb. bottles. six at a time. This seems to me a very effective means of keeping clean these foul discharging growths of the carcinomatous class; the Peroxide and permanganate, being a most thorough disinfecting combination; and if employed in any case of cancerous growth, where palliation alone must be relied on, will make that life and the lives of those closely associated with it, more endurable. One important fact remains in regard to the chemical properties of the Peroxide. To be effectual, it must be kept from the air, tightly corked, in a dark bottle, and in a cool place. It must be used directly from the original bottle. Do not permit the druggist to pour from one bottle to another when dispensing it, else the oxygen will escape, and it will be powerless. If when using, the white foam does not appear, it is because the preparation has lost its strength, and is absolutely of no use, of no more value than so much water. $H_2 O_2$ must be present. It is the additional atom of O combined with the H, that does the work, by giving up that nascent O for the purpose of oxidation. The strength should be 15 volumes. The preparation which I always use is Marchand's Peroxide of Hydrogen (medicinal).

GLYCOZONE IN THE TREATMENT OF GASTRIC TROUBLE.

(Extract from *Doctor's Weekly*, October 29th, 1892.)

EDITOR OF *Doctor's Weekly:*

DEAR SIR.—I received your paper this morning and was pleased to see a notice of glycozone. I have used it recently with great success in two cases of gastric trouble when almost all the useful remedies had failed, and with the happiest results. It is a perfect antiferment, relieving all the distressing dyspeptic trouble and aids digestion better than all the pepsins I have ever seen. Respectfully,

OLIVER D. NOSTRAND, M. D.,
286 West Fourth St.

Cincinnati, O., Oct. 22, 1892.

PEROXIDE OF HYDROGEN AND ITS USE IN EAR DISEASES.

Read in the Section of Laryngology and Otology, at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.
(Abstract.)

By WALTER B. JOHNSON, M. D., of Paterson, N. J.

Surgeon to the Paterson Eye and Ear Infirmary.

(Published by the *Journal* of the American Medical Association, October 29th, 1892)

The peroxide solution may be used advantageously in the treatment of mastoid disease after an incision has been made. The action of the remedy upon bone denuded of its periosteum, and even upon carious or necrotic bone, is unique; it causes a disintegration of the molecular particles and they are gradually subdivided and carried away in the frothy product of the chemical action, until a healthy surface appears upon which the solution seems to have only a beneficial effect. The action of the solution upon dead bone can be readily demonstrated by placing a small portion of necrotic bone in it; the bone in a short time will begin to disintegrate and continue to do so until it is entirely divided into very minute particles.

In some of the cases of mastoiditis treated, in which the denuded surface was very extensive, in from three to six weeks the bone would be in a perfectly healthy condition, the discharge of pus controlled, and the subsequent closing of the wound, when allowed, occurred rapidly and was perfectly satisfactory.

In one of the cases, in which for three years any attempt to allow the closing of the sinuses would be followed by an exacerbation of the inflammation, the carious condition was relieved and the opening allowed to close after two months of treatment.

The treatment is very simple and consists in syringing through the opening and into the meatus with a small glass syringe a sufficient quantity of the fifteen volume solution, at each sitting, to render the pus thoroughly aseptic, then packing the ear and the wound lightly with strips of sheet lint or gauze thoroughly soaked in the same solution, great care being taken to allow the wound to close, although the packing must not be so introduced that it will prevent the free exit of any pus which may be formed during the interval between the dressings. The external incision should be made ample and if the packing does not prevent the opening from closing during the progress of the treatment it must be reopened with the knife. Glycozone has been suggested for use in keeping the wound open, being used instead of the peroxide in the dressing.

The result of this line of treatment which has been followed in a considerable number of mastoid cases, has indicated the possibility of a degree of conservatism in the treatment of mastoid disease which is very desirable.

All the cases treated have done well, no deaths have occurred and in no case was it considered necessary to scrape the bone or to remove any portion of it, while the period of time necessary for the wound to assume a sufficiently healthy condition to render it advisable to permit it to close, did not seem longer than the time which must ordinarily elapse after the operation for thoroughly scraping the mastoid, and was much shorter than the time required before the wound produced in chiseling the mastoid could possibly be allowed to close.

Special care should be taken to keep all the applicators or sprays, used either with the peroxide of hydrogen solution or glycozone, perfectly clean, especially in case of mixtures of glycerine and peroxide which should be made fresh every second or third day to prevent the possible formation of formic acid; only silver, hard rubber, glass or porcelain should be used for measuring purposes.

If care is taken to properly keep the solutions, they are perfectly harmless and calculated to be of inestimable benefit to all who use them.

THE OPERATIVE TREATMENT OF FISTULA IN ANO.

By LEWIS H. ADLER, Jr., M. D.,

Adjunct Professor of Diseases of the Rectum, Philadelphia Polyclinic and College for Graduates in Medicine.

Read before the Phil. County Medical Society, November 23d, 1892.

Reprinted from the *International Medical Magazine* for October, 1892.

THE AFTER-TREATMENT.

After the operation of fistula *in ano*, I am in the habit of packing the wound with iodoform gauze, which is left undisturbed for twenty-four hours. This is done to prevent subsequent hemorrhage. A pad of gauze and cotton and a T-bandage are next applied.

The subsequent dressing of the case should be daily attended to by the surgeon himself. The parts should be kept perfectly clean, and the wound syringed with peroxide of hydrogen (Marchand's), carbolic acid solution, etc., after which a single piece of iodoform gauze laid between the cut surfaces of the wound will be all the dressing required.

In the after-treatment of these cases I have seen the healing process greatly retarded by the excessive packing of the wound with lint, or delayed by the undue use of the probe. Such interference is to be avoided.

If the granulations are sluggish and the discharge is thin and serous, it will be well to apply some stimulating lotion, such as peroxide of hydrogen, or a weak solution of copper sulphate (two grains to the ounce).

The surgeon should be on the watch during the healing process to avoid any burrowing or the formation of fresh sinuses. Should the discharge from the surface of the wound suddenly become excessive, it is evidence enough that a sinus has formed, and a careful search should be made for it. Sometimes it is under the edges of the wound that it commences, at other times at the upper or lower ends of the cut surface, and occasionally it seems to branch off from the base or the main fistula.

Pain in or near the seat of the healing fistula is another symptom of burrowing, and when complained of, the surgeon should carefully investigate its cause.

After an operation for fistula, the patient's bowels should be confined for three or four days, for which purpose opium is usually given. At the end of this time the bowels may be opened by the administration of a dose of castor oil, and so soon as the patient feels a desire to go to stool, I am in habit of ordering an enema of warm water to be administered, which has a tendency to render the fæces soft and fluid and hence to make their passage easier. The patient should be kept in a recumbent posture until the fistula is healed and until the bowels are moved; the diet should be liquid such as milk, beef-tea, and broths. The time required for a patient to recover after an operation for fistula *in ano* varies with the extent of the disease. In an average case it will be necessary to keep the patient in bed for two weeks, and confined to the house for a couple of weeks longer.

ABSTRACT FROM A TREATISE ON DISEASES OF THE RECTUM, ANUS AND SIGMOID FLEXURE.

By JOSEPH M. MATHEWS, M. D.

Prof. of Principles and Practices of Surgery, and Clinical Lecturer on Diseases of the Rectum; Kentucky School of Medicine, Louisville, Ky.

Page 188.—After the operation is performed, Dr. Mathews writes as follows:

I then syringe the cavity out freely with a solution of bichloride of mercury (1 to 5000). Then a tent made of iodoform gauze is introduced into the cavity, just as much

as it will hold. After the expiration of twelve hours, I withdraw the iodoform gauze and allow any accumulation to pour out freely. I have used the bichloride solution here first, because I believe it to be a good antiseptic and at the same time a good stimulant to the cavity. However, afterward I substitute another agent—viz., Peroxide of Hydrogen. Of course our great object in dealing with cavities of this kind are twofold: First, to stop suppuration; second to heal the diseased structure. For preventing suppuration, we have chiefly relied upon solutions of bichloride of mercury and carbolic acid. Every surgeon is well aware of the fact that dangers attend the use of carbolic acid in the treatment of suppurating diseases, and the too free use of the bichloride of mercury in large suppurative cavities might not only cause too much inflammatory action, but also produce a general effect upon the system which would be shown in ptyalism. We have in a strong solution of peroxide of hydrogen a substitute for these two without any of their attending dangers. Undoubtedly the best preparation of this agent is Marchand's Peroxide of Hydrogen (medicinal). His fifteen volume solution will retain active germicidal power for many months, if kept tightly corked in a cold place. It can be used, of course, in any strength that the surgeon desires. Marchand has devised a hand atomizer and ozonizer for the purpose of using the agent in an easy manner.

The abscess cavity is injected once a day with this agent, either pure or diluted with water, from three to ten parts, and each time the tent of iodoform gauze is pushed gently into the external opening, but so as not to fill the cavity. As the healing process goes on, a less amount of gauze is used. If large rectal abscesses are treated in this manner, the number of cases of fistulæ will be greatly reduced.

SOME OF THE USES OF PEROXIDE OF HYDROGEN IN GENERAL SURGERY.

By THOMAS H. MANLEY, M. D., New York.

Published by the *New England Medical Monthly*, Danbury, Conn., Dec., 1892.

Since Marchand placed on the market, a pure, unadulterated peroxide of hydrogen, and Morris of New York, called attention to the marvelous power of this preparation as a deodorizer, the profession have very generally employed it in such pathological conditions as will enable us to apply it directly to the diseased surfaces. In general medicine it has been employed on extensive scale in the phagedenic, sore throat of malignant scarlatina, diphtheria, and other maladies.

In surgery, it has been particularly recommended in non-malignant, suppurating sores.

Since it has now come to be very generally known, that with very few exceptions all chemical solutions of sufficient potency to kill germs, possess such irritating properties, as to interfere with healthy cellular proliferation, there has been a demand for something which might nullify germ activity, and at the same time, in no way interfere with the recuperative energy in the histological elements. In a large class of cases peroxide of hydrogen seems to provide this want.

In the Harlem Hospital and Dispensary service, the peroxide, Marchand's medicinal, is largely employed; and, in appropriate cases, with better results, than with any other agent.

It seems to possess a special affinity for the lethal elements, in all suppurating processes, which tend to run into chronicity.

We have largely employed it in those cases of fistular sinuses, so seriously resulting from suppurating lymphatic glands in children and adults; as well, as in those buboes which are sure to heal and discharge for a long time, a sero-purulent matter.

The only class of sinuses in which its use should be employed with caution, are those in which the fistula extends, into a lesion in the osseous elements.

In many cases, in which a long, deep rent has been made in the tissues, in strumous subjects, in which healing processes are delayed, its employment is very satisfactory, in effecting primary union. Now, whether it acts as antiseptic; or, by imparting fresh vitality to the cells, is a question by no means settled.

When we use it, it should be applied in such strength as different cases require. In foul smelling, copiously discharging processes, it may be used in a concentrated form, while in milder cases, particularly in children, it should be diluted.

In my own private practice none has given me so much satisfaction as that manufactured by Chas. Marchand; and as we have seen in Dr. Squibbs' "Ephemeris," for this year, this preparation seems to be regarded by chemical analysis, to maintain a high and uniform standard of strength and purity.

INTESTINAL OBSTRUCTIONS. DIAGNOSIS AND TREATMENT.

By FREDERICK HOLME WIGGIN, M. D., New York.
Attending Surgeon City Hospital, Blackwell's Island.

(Abstract from the *Medical Record*, July 23, 1892.)

Irrigation of Abdominal Cavity.—As to the irrigation of the abdominal cavity, the practice inclines toward the use of plain water or so-called normal salt solution, six-tenths per cent. My own experience and observation lead me to believe that many of the complications following laparotomy can be traced directly to the use of chemical solutions during the operation, either for irrigation, for disinfecting the hands of the operator, his instruments, or sponges. In a case where the abscess is circumscribed, it is bad practice to irrigate, owing to the danger of infecting the general cavity. In all aseptic cases irrigation should be avoided. When irrigation is necessary, while the normal salt solution is best, still in some cases, I believe, this may be followed by a second douche containing a small quantity of hydrogen dioxide. I have used it for several years in all kinds of surgical work, and once in the general abdominal cavity; in a case already alluded to (the patient dying shortly after the operation, no deduction can be drawn from it), and where pus was present, have found it in proper solution more efficient and less irritating than anything else. In some of the New York hospitals, it has been used for irrigating the pleural cavity in empyema, and it has proved satisfactory. I have been unable to find any record of a case where this compound has been used for irrigating the general cavity. In the letters already referred to, Dr. Senn says: "Have used the hydrogen dioxide in cases of limited peritonitis, and should not hesitate to use it in the diffused form."

Dr. Mann says: "And I have never used hydrogen dioxide in the general cavity, but have applied it to the cut ends of tubes, holes in the intestines and bladder, etc., with good results."

Dr. Clement Cleveland says: "I have never used the dioxide in the peritoneal cavity. I have used it pure in the uterine cavity, in puerperal septicæmia, with excellent results."

Dr. Robert T. Morris writes: "In localized septic peritonitis, where I have occasion to expose directly the infected locality with retractors, I pour in the H_2O_2 in full strength and without any warming whatever. After allowing it to remain for a minute or two I sponge out and repeat, leaving the second lot for five minutes, sometimes not removing it at all, but putting my gauze wick down into it and allowing it to be sucked up at leisure by the drainage-wick. I have used it twice only in general septic peritonitis. One of the cases was an appendicitis (perforated), with the patient moribund at the time of applicatton of the H_2O_2, I poured in a very large quantity, enough to bathe all of the abdominal organs; a very little hot water was poured into the peroxide just at the moment of using it, 'to take the chill off.' The peroxide was then siphoned out and the

patient was made very much easier by the treatment, although he finally died. The other patient died too. The case was one of general septic peritonitis that had gone on to suppuration after removal of a gangrenous ovarian cyst. The post-mortem examination showed that the H_2O_2 had cleaned the cavity beautifully, and, although my patient died, I nevertheless obtained the impression that one has after such observations, that the H_2O_2 was very useful, and evidently quite harmless in itself. There are lots of cheap peroxides on the market that contain acids, and such would be harmful." (See article by Dr. Robert T. Morris, page 55, also article by Dr. F. H. Wiggin, page 75.)

PEROXIDE OF HYDROGEN.

BY L. C. SCHUTT, M. D., TOLEDO, OHIO.

Published by the *Toledo Medical Compend*, December, 1892.

Referring to Peroxide of Hydrogen (medicinal) Dr. Schutt writes as follows:

DIPHTHERIA.—As a local application in this disease, Marchand's Peroxide of Hydrogen (medicinal), can be used full strength, but in the majority of cases it is best to dilute it with from 20 to 30 per cent. of water. It may be applied with a brush or atomizer, and used as often as the severity of the case may require.

PITTING OF SMALL-POX.—The topical application of peroxide of hydrogen or glycozone is very beneficial. It allays the irritation of the skin and lessens the pitting and force of the disease.

The local application of the peroxide in hay fever has proven very beneficial when mixed with an equal quantity of water and glycerine. It should be used at the very outset of the disease.

AS A COSMETIC.—When applied to the face it will make imperceptible a dark downy growth on the face when the hairs are numerous and fine and cannot be removed by electrolysis. It should be applied several times a day with a camel's hair brush, until the hairs are thoroughly whitened and after that as often as necessary. The grease which adheres to every hair should be removed by applying a solution of powdered borax in water.

In deep cuts and ulcers you will find the greatest benefit from the use of peroxide of hydrogen.

I will report one case in which very decided benefit was obtained from the use of this preparation.

Mr. P. O. H., a young man 23 years old. He received an injury to his right hip, while helping to unload a cannon. It terminated in hip-joint disease, which confined him to the house for more than a year. Finally suppuration occurred, leaving him with two sinuses and several openings. All kinds of washes were used but the pus kept up. At last I commenced treating it with peroxide of hydrogen, using it pure and diluting it with water. We used it every day for seven months at which time all discharge of pus had stopped and the openings nearly closed. I am sure no other bactericide could have been used so long and with such good results, without injury to the parts or general system.

RETAIL PRICES.

For goods delivered in New York.

1 Box containing 1 lb. Ch. Marchand's Peroxide of Hydrogen, 15 vol. medicinal, 1 lb. C. P. Glycerine, and 1 Hand Atomizer and Ozonizer..... $5.00

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½-lb. Bottle	75c	½-lb. Bottle	1.75
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When you cannot procure Ch. Marchand's preparations in their **original, unbroken packages** at your druggist, send money order to "Ch. Marchand" at the above address, and shipment will be made by express.

These remedies are put up in glass and cannot be mailed.

Should you have been imposed upon by anyone who substituted spurious preparations instead of the genuine article, please report to me, so that I may expose and prosecute such consummate fraudulent dealers. I want to protect the physician, his patients as well as myself.

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